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BRITISH MEDICAL JOURNAL

JOURNAL OF THE

BRITISH MEDICAL ASSOCIATION

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 13 1941

OBSERVATIONS ON SOME NORMAL AND INJURIOUS EFFECTS OF COLD UPON THE SKIN AND UNDERLYING TISSUES

II. CHILBLAINS AND ALLIED CONDITIONS*

BY

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The reactions of the skin to cold described in Lecture I (p. 795) are acute reactions in that they appear in quick response to the stimulus and are relatively transient effects. The main response is vascular, consisting of vasodilatation and increased permeability, displayed in the traditional signs—redness, heat, and swelling. We are about to examine reactions that are neither transient nor so simple, and yet are recognized as associated with exposure to cold. And we are to discuss the responsibility of cold for these lesions and the manner in which they are produced. I refer to chilblain, to "erythrocyanosis" of the skin, and to so-called "trench foot."

Principal Features of the Lesions

First it may be well briefly to outline the salient features of these lesions and the circumstances in which they arise.

Chilblain.—The chilblain is most familiar to us as it occurs on the fingers, its most frequent site. It affects particularly the dorsal surface of the phalanges, especially between rather than over the joints. The thumbs are relatively exempt, though there is no part of the dorsal surface of the hand, or for that matter of the foot, which may not be affected. The chilblain appears as a red swelling, usually warm or hot and itching. There is obvious vasodilatation, and there is oedema—phenomena which, like itching, are common reactions to cutaneous injuries of any kind. The further course of the chilblain is inconstant. It may disappear in a few days. Usually it continues for periods of days, weeks, or months, but the original state of vasodilatation subsides. Redness gives place to a deep purple or reddish-purple colour, itching to soreness and pain; the swelling remains and may increase; the tissues may become tenser; the skin often blisters or even ulcerates; but whichever happens the inflammation tends to indolence and slow healing.

That chilblains have come to be regarded as provoked by cold, and not by frost, is implicit in a term that has for so long met with popular approval in this country. But in other lands cold as the essential provocation has not been so clearly recognized. Thus it happened that Unna (1894) obtained credit for asserting, as late as that time, that these lesions, popularly termed "Frostbeulen" in German-speaking countries, are not due to freezing, as he stated they were generally regarded to be. The chilblain is common in our own land, where, though damp cold is frequent, frost-bite is a rarity. It appears with winter and generally departs only with the coming of warmer days. It is not the rule for subjects to account for the lesions presented by a single and unusual exposure to cold, though from time to time such histories are given. It is quite definitely the rule that sufferers from chilblains of the hands are people, young rather than old, whose hands in winter, and quite often in summer too, are habitually colder than those of their companions. It often happens that the hands as a whole are deeply coloured.

Erythrocyanosis of the Leg.—This lesion appears as a vascular discoloration of the lower part of the leg; the front of the leg immediately above the ankle is perhaps the favourite site. The skin becomes diffusely purple, or purple and red; the region of the follicles is often particularly marked by this congestion. The skin is usually over-tense, and therefore sometimes shiny; the oedema may be great, and in time the skin may blister or thickening may appear and break down to form ulcers. The lesions become chronic and indolent, and breaches of the skin surface heal slowly. The relation of the lesion to cold is similar to that of chilblain. It comes in winter and stays till the warmer days return. As in the case of chilblain of the hands, with which it is often associated, this lesion appears in those whose limbs tend to persistent coldness.

Trench Foot.—This condition sometimes begins with pain and tenderness without notable abnormality in appearance. Usually the foot is cold, red or blue, and swollen. Out of the cold trench the foot may be hot. In the more severe cases blisters and ulcers form and areas of the skin become necrotic; toes or even large parts of the foot become gangrenous. The condition was recognized and clearly described by Larrey (1812) in his account of Napoleon's Russian campaign. Larrey's description is memorable: he pointed out that the malady could not be ascribed to frost-bite. He says that in the exceedingly cold days which preceded and succeeded the Battle of Eylau—the temperature being 10° to 15° (Réaumur) below zero (9.5° to −1.75° F.)—not a soldier complained of frost-bite, although the days and many of the nights were passed in the snow with hard frosts. Then the temperature rose abruptly to 3° and 5° R. above freezing-point (39° and 43° F.); a thaw had set in and it rained. From this time a large number of soldiers complained of severe pain in the feet, and of itching, redness, and swelling, which progressed in some to insensibility and gangrene. In the Crimean War the most serious foot troubles appeared in cold wet weather. In the war of 1914-18 "trench foot," as it was called in France, appeared among men who stood or worked for days in the cold water or mud of the trenches, and was responsible in the first winter for thousands of casualties (Grattan, 1922, 1923). Similar foot trouble was reported among Turkish soldiers exposed in wet cold trenches (Wieting, 1913). By general consent long exposure to wet and cold was responsible, though tight footgear was regarded as contributory, and infection, which occurred readily in the conditions experienced, might be added to complicate the lesion.

Relationship of the Lesions

Here, then, are three conditions—chilblain, erythrocyanosis of the leg, trench foot—separately described, but increasingly regarded as different manifestations of essentially the same process and as resulting from prolonged action of cold. They have a very great deal in common: in the early stages itching or tender, presenting coldness and high vascular coloration, they may proceed to swelling, blistering, and ulceration in all three instances. That necrosis belongs more to trench foot finds a natural explan-

* The third, and last, of these lectures, on "Frost-bite," will appear in our next issue.

ation in the severity of damage and in a neglect enforced by conditions of service. Indolence of the lesions and slowness of healing are common to all three.

Their chief distinctions lie in their locations, and these are clearly fixed by manner of exposure. Chilblains come on exposed hands and on just those parts that cool most profoundly; when they affect the foot they will often display the areas of chief exposure, appearing in women on the dorsum and sharply defining the parts of the foot unshod. Erythrocyanosis is particularly a woman's malady, and as a frequent lesion is recent: its prevalence dates from the shortening of skirts and the use of thin stockings. In "trench foot" it is the foot only that has long been wet and cold.

A comparison of the microscopical lesions of chilblain and erythrocyanotic skin confirms the view of their close relationship. The lesions are those of subacute or chronic inflammation: widened vessels, oedema, and perivascular infiltration form the essence of the picture, until destructive lesions, also of common pattern, are added (Gans, 1925; Grattan, 1922, 1923; Hodara, 1906; Juster and Delàter, 1926; Pautrier and Ullmo, 1928). Haxthausen (1930) has rightly insisted on their general resemblances. Of the histology of trench foot we know little or nothing directly. But we do know that trench foot not infrequently presents macroscopically a picture identical with that of large chilblain (Grattan, 1922, 1923). It is a mistake to regard the lesions as we see them as specifically distinct: they present a common, fundamental, and hardly unexpected picture.

If it is accepted that chilblain, erythrocyanosis, and trench foot are in their origins essentially similar, further discussion may be concentrated upon one of these.

Pathogenesis of Chilblain

Our interest in the pathogenesis of chilblain cannot be satisfied by referring to H-substance release. Such release would of course account for the itch, the redness, and the swelling. Chilblain, however, is more than a simple vascular response; it is supplemented by other processes—namely, diapedesis of red and white cells, infiltration by various types of inflammatory cell, hyperplasia of epidermal and connective-tissue cells, etc. These are all phenomena common to subacute inflammatory processes occurring in response to diverse injuries, such as repeated friction or long-continued action of heat. They are the natural and inherent reactions of the skin to injury in general. The interest of the problem is no longer in the lesions themselves but in the manner in which injury arises, and inquiry may take one of several directions

In Chilblain Subjects, are the Immediate Reactions of the Skin to Cold Normal?

The reactions of a finger to crushed ice may be taken first. If the subject is sitting ordinarily clad in rooms at temperatures of from 19° to 21° C. (66° to 70° F.), it is the rule for the finger to react well, its temperature rising 4° to 8° C. (7° to 14° F.) within 10 to 20 minutes of its cooling. At lower room temperatures—namely, 17° to 19° C. (63° to 66° F.)—the reaction is usually smaller and delayed or fails. A chilblain subject sitting very warmly clad out of doors, the temperature being 6° C. (43° F.), showed a large reaction of the finger (8° C.) after cooling. Tenderness following such exposure to cold is no greater than that displayed by normals. Thus the normal mechanism of defence against injurious cooling is present in these cases. It is limited in them in one sense only. The reaction of the finger of normal subjects is neither so free nor so prompt if the forearm is unusually cold, because this coldness tends to close down the vessels of the forearm through which blood passes on to the region that is called upon to react. The forearm of the chilblain subject is in general colder than that of the normal, and thus the defensive mechanism, though intact, is less effective.

The immediate reaction of the chilblain subject's skin to histamine pricked in, or to simple injuries of any kind, is normal, provided that the skin is naturally warm when so tested. The reactions of skin, whether belonging to the normal or the chilblain subject, are less intense but more prolonged if the skin is cold. Thus the chilblain subject's skin reacts normally when tested under standard conditions, but the coldness of the chilblain skin modifies the reaction.

If the hand of a chilblain subject is immersed in cold water (3° to 5° C.; 37° to 41° F.) for a period of two hours its appearance at the end does not differ from that of the similarly treated normal hand. There are the same signs, described in the first lecture, of vascular dilatation and oedema—signs that subside within a few hours. As stated in the same lecture, there are rare instances in which cold damages skin very unusually, producing acute whealing. These subjects are not prone to chilblain; neither do chilblain subjects present this phenomenon.

However the skin of the chilblain subject has been tested in its immediate reaction to injury it does not depart from the normal.

Production of Chilblain by Prolonged Cooling

In the chilblain subject it is very unusual for a finger that has a normal appearance to develop chilblain after immersion in ice-cold water for half an hour. In no instance out of many such tests have I seen such an after-effect. But I have known chilblain follow more prolonged cooling. Thus an exposure of the hands out of doors for two hours at 9° C. (48° F.) followed by an hour in a cold room and warming of the fingers before a stove produced in a predisposed subject the first chilblain of the season. A patient usually suffering from chilblains on both hands was asked to immerse the left or less susceptible hand for five minutes in cold water (5° to 10° C.) ten times a day. She continued to do so for a month, and then developed chilblains on several fingers of this hand, the right remaining without them. These observations bear out the statements of many patients and emphasize the importance of prolonged or repeated cooling. There is, however, a very real difficulty in arriving at true values for the duration of cooling required. A patient suffered regularly in the winter from chilblains; during the autumn, before any chilblain had appeared, her hand was immersed in water for a period of two hours at 7° (45° F.). The hand had resumed its usual appearance within two hours, but at five hours a typical chilblain had begun to form on the little finger: it blistered the same evening and healed in a few days. Now, it is to be observed that such an exposure does not cause chilblains in a normal subject and that all five fingers of the patient's hand were similarly exposed but one only developed chilblain. The reason may be found in the fact that the chilblain appeared on the dorsum of a proximal phalanx where seven months previously a chilblain had occurred, and which still presented a persistent reddening and a little thickening of the skin. The observations, at all events, definitely support the idea that an area that has suffered once is one specially prone to suffer again. Here attention may be drawn to the fact that skin which has previously been damaged is in general prone to react. Thus scars left in the skin from small infected wounds sometimes, and temporarily, become red and swollen, and itch, from time to time without obvious reason. A man who has had trench foot is stated to be more prone to have it a second time. But, recognizing that there is this proneness in the case of chilblain, it is impossible accurately to

determine by observation the amount of cooling needed to produce a lesion in a chilblain subject; for in no experiment can we be sure of the extent of preliminary damage that is present: the final or provocative cooling may be regarded as adding its quota of damage, the sum of which leads to an obvious reaction.

We are brought to ask if there is evidence that cooling can produce chronic inflammatory lesions in skin that has previously displayed no chilblain or predisposition, and, if so, how much cooling is required in these. Smith, Ritchie, and Dawson (1915-16) were prompted by observations upon trench foot, during the last war, to expose the shaved feet of rabbits to damp cold. The rabbits stood on cold or half-frozen mud. Swelling of the feet was visible in forty-eight hours, and subsequently increased; microscopically they found oedema, perivascular infiltration, and other evidences of vascular damage, including fibrin in the tissue spaces. They thus proved that, in the rabbit, simple prolonged exposure to cold can produce a subacute inflammation of the skin and subcutaneous tissues of the feet. And the time required was about two days. The data we possess indicate that "trench foot" usually requires longer exposure or repeated exposures.

It is noteworthy that patients displaying trench foot for the first time give no previous history of trouble with feet or of chilblains (Smith, Ritchie, and Dawson, 1915-16). Though susceptibility no doubt varies, the lesions may be regarded as occurring in normal people. Chilblains appear on the foot and leg of children paralysed by anterior poliomyelitis, but only when disuse has brought the limb to a state of almost persistent coldness for a long period; here intermittent exposure of weeks or months is responsible.

The Predisposing Cause of Chilblain

It has been suggested that chilblains are associated with an altered blood-coagulation time (Wright, 1897); but such change is not found with constancy. The only predisposing cause which can be cited because constant, in the case both of chilblain and of erythrocyanosis of the leg, is an almost habitually defective circulation in the limbs; so that the temperature of the skin often falls close to that of the surrounding air, in circumstances in which a normal limb circulation would preserve a natural warmth. The limbs are cold not only in cold but also in cool surroundings. There are many distinct conditions in which the blood supply to a limb is defective, and in all these chilblains often occur. Thus they are frequent in the limbs in syringomyelia, anterior poliomyelitis, and conditions of coldness from disuse; they are found in acrocyanosis, in Raynaud's malady, and in thrombo-angiitis, where blood-flow deficiency results variously in spasm of vessel wall or thrombotic obliteration of the vessels (Lewis and Pickering, 1936).

As the examples of trench foot, and of chilblain in anterior poliomyelitis, illustrate, there is reason to believe that adequate and sufficiently prolonged cooling will produce inflammatory states of the skin originally quite normal. It is to be expected that given exposures will produce chilblain more readily in subjects in whom the skin temperature falls most readily. It is to the high vascular tone of the limb vessels, to the readiness with which the temperature of fingers or other part falls to that of its surroundings, and to the long delay in the release of this spastic condition of the vessels after general vasodilatation sets in, that the chilblain subject seems to owe his predisposition to these lesions.

Smith, Ritchie, and Dawson found in their rabbits that strapping the legs intensified the injury due to exposure; it is recognized that tight footgear increases the frequency of trench foot; and in a chilblain subject I have seen chilblains appear only on a strapped foot when both feet had been equally exposed to cold for some hours in a deliberate test. In all these instances the explanation lies in hindrance to blood supply causing greater cooling on exposure.

The indolence of chilblain and of erythrocyanosis, once such lesions are established, is also clearly explicable on this basis of deficient circulation; and nothing leads more quickly to recovery than the re-establishment of a flow of blood to the affected parts adequate to bring their temperature to and maintain it at normal levels. The essence of treatment lies in establishing natural warmth. The affected parts are to be directly protected from exposure to cold and from mechanical injury; and relaxation of the limb vessels is to be induced by warming the trunk with extra clothing, by warmer rooms, and, when necessary, by confinement to bed.

REFERENCES

Gans, O. (1925). *Histologie der Hautkrankheiten*, **1**, 175, Berlin.
Grattan, H. W. (1922). In *History of Great War*: Med. Serv., *Surgery of the War*, **1**, 169.
—— (1923). Ibid., *Hygiene of the War*, **2**, 295.
Haxthausen, H. (1930). *Cold in Relation to Skin Diseases*, Copenhagen.
Hodara, M. (1906). *Monatshefte prakt. Derm.*, **42**, 449.
Juster, E., and Delàter, G. (1926). *Bull. Soc. franç. Derm. Syph.*, **33**, 618.
Larrey, D. J. (1812). *Mémoires de Chirurgie Militaire et Campagnes*, **3**, 61, Paris.
Lewis, T., and Pickering, G. W. (1936). *Clin. Sci.*, **2**, 149.
Pautrier, L. M., and Ullmo, A. (1928). *Bull. Soc. franç. Derm. Syph.*, **35**, 80.
Smith, J. L., Ritchie, J., and Dawson, J. (1915–16). *J. Path. Bact.*, **20**, 159.
Unna, P. G. (1894). *Die Histopathologie der Hautkrankheiten*, p. 20, Berlin.
Wieting (1913). *Zbl. Chir.*, **40**, 593.
Wright, A. E. (1897). *Lancet*, **1**, 303.

SOME EFFECTS OF VITAMINS B AND C ON SENILE PATIENTS

BY

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The literature on the effects of vitamins B and C on the aged is not great.

Vitamin C in Old Age

Yavorsky, Almaden, and King (1934) investigated the amount of ascorbic acid in human organs at different ages. They found that with ageing the organs become poorer in this vitamin. For example, the following amounts of ascorbic acid in milligrammes per gramme of organs were recorded:

	Age: 1 to 30 days	11 to 45 years	46 to 77 years
Adrenals	0.581	0.393	0.230
Brain	0.460	—	0.110
Liver	0.149	0.135	0.064
Kidney	0.153	0.098	0.047
Lung	0.126	0.065	0.045
Heart	0.076	0.042	0.021

A similar decrease with ageing occurred in pancreas, spleen, and thymus. Marinesco, Alexianu-Buttu, and Olteanu (1936) estimated the amount of ascorbic acid in the cerebrospinal fluid (in mg. per 100 c.cm. of fluid), and found in children up to 10 years old 2.8 to 2.2 mg., in persons aged 20 to 30 years 1.4 to 1.1 mg., in those aged 50 to 60 years 0.6 to 0.4 mg., and in those over 70 years old 0.3 to 0.2 mg. A low level of vitamin C in the blood, cerebrospinal fluid, or urine of aged people was also recorded by Plaut and Bülow (1935, 1936), Gander and Niederberger (1936), Altmann and Goldhammer (1937), Monauni (1937), Remp, Rosen, Ziegler, and Cameron (1940). The last-named authors, and also Plaut and Bülow, and Gander and Niederberger, were able to increase this low level by oral administration of ascorbic acid, which appears to exclude the possibility that this condition can be caused by decreased

absorption of the vitamin from the intestinal canal of senile persons. A probable cause of the low vitamin level would be deficiency of vitamin C in the diet of old people. For example, Yavorsky, Almaden, and King (1934), Malmberg and Euler (1935), and Wortis, Wortis, and Marsh (1938) observed a sharp decrease of vitamin C levels in adrenals, liver, brain, and kidneys of guinea-pigs fed on a diet deficient in vitamin C. Also, Schroeder (1939) found in human beings on a diet poor in vitamin C only 0.8 mg. of ascorbic acid per 1,000 c.cm. of blood instead of the usual 10 mg. on a normal diet. These experiments, however, were not on aged persons.

The clinical observations of Plaut and Bülow (1935) and Monauni (1937) indicate that the decreased amount of vitamin C in older persons cannot be explained merely by the low content of this vitamin in the diet, because the difference between young and old persons is present even when both groups are receiving the same hospital diet. Plaut and Bülow, and Wortis *et al.*, have therefore suggested that in senile persons there is a decrease in intensity of those metabolic processes in which vitamin C is taking part. In our opinion the administration of extra-large quantities of ascorbic acid very probably compensates this faulty metabolism or deficient absorption, and this explains the increased content of ascorbic acid in the urine of senile patients receiving large amounts of the acid.

Berkenau (1940) found definite hypovitaminosis-C in senile psychoses, and Bersot (1936) in some mental and nervous diseases. Wortis, Wortis, and Marsh recorded a subnormal vitamin C content of the blood and cerebrospinal fluid in alcoholic patients who suffered also from neuritis or psychopathy. They therefore suggest that a nutritional factor may play a part in the production of mental and nervous diseases. Gander and Niederberger found that treatment of senile persons with adequate doses of ascorbic acid was followed in some cases by improvement of the general health, increased vitality, better sleep, disappearance of rheumatic pains, and a favourable effect on pneumonia of senile patients. Schroeder, reviewing the literature of the subject and the results of his own observations, considers 50 mg. of ascorbic acid to be the minimum daily dose for human beings.

Vitamin B Complex in Old Age

Greying of Hair.—Niemes and Wacker (1922), Hartwell (1923), Bakke, Aschehoug, and Zbinden (1930), and Gorter (1934, 1935) recorded greying, bleaching, or yellowing of hair in rats with dark fur on different deficient diets. Gorter claimed that an insufficient amount of copper salts was responsible in his experiments for the depigmentation of the fur, which he was able to prevent or to cure by the administration of copper salts. Since György (1935) was not able to cure the bleaching of the fur of rats on a vitamin-B-deficient diet by supplementing the diet with aneurin, lactoflavin, and Peters's eluate factor, none of these factors could be considered as the anti-greying compound. Morgan, Cook, and Davison (1938), Morgan and Simms (1939, 1940), Morgan (1941), Lunde and Kringstad (1939), and Mohammad, Emerson, Emerson, and Evans (1939) have confirmed that greying of hair develops regularly on vitamin-B-deficient diet, and, in addition, have proved that of all the B complex the "filtrate factor" alone can prevent or cure this pathological condition. At the same time, the experimental results of these authors suggest that very probably the filtrate factor contains two vitamins, one anti-greying proper and the other growth-promoting. Oleson, Elvehjem, and Hart (1939) also came to the conclusion that the anti-greying vitamin is different from all the known B factors.

Morgan and co-workers produced greying of the fur, and cured it with the anti-greying vitamin, in dogs and silver foxes as well as rats. It still remains to prove, however, that in natural ageing deficiency of this vitamin is at least partly responsible for the greying of hair in old age, and not some other cause. For instance, Morgan and Simms (1940) themselves recorded that injections of cortin and thyroid extract can cure, although slowly, the greying of hair in deficient rats. In his latest paper Morgan (1941) stresses the fact that rats on a diet deficient in the filtrate factor show, in addition to greying of the fur, some other signs of ageing—loose wrinkled skin, sparse hair, atrophic adrenals, and finally emaciation with ulceration of the skin.

Presence of Some Similar Pathological Changes in Vitamin B_1 or Nicotinic Acid Deficiency and in Senility

Williams, Mason, Wilder, and Smith (1940) produced experimental deficiency in 6 normal healthy women for a period of 88 days on a diet sufficient in all vitamins except aneurin (B_1). Among the symptoms observed by these authors the following features also often occur in senile patients: depressed mental state, weakness, dizziness, easy fatigability, backaches, soreness and atony of muscles, palpitation, dyspnoea on exertion, reduction of the capacity for physical and mental activity, difficulty of concentration and memory, insomnia, headaches, abdominal distension, and roughness of the skin. McLester (1939) and Spies, Hightower, and Hubbard (1940) give an account of "pre-pellagrous prodromal" forms of nicotinic acid deficiency. In the symptoms described it is also possible to note some features usually occurring in aged people: rashes, symmetrically and bilaterally developing on the skin; mental disturbances such as apprehension, confusion, disorientation, nervousness and forgetfulness, depression, weariness; and also increased fatigability, headaches, and insomnia. While pointing out the similarity of the features, however, we should like to note that the same pathological conditions might be produced by altogether different causes, and therefore the similarity might suggest only the desirability of investigating the possible significance of B vitamins in the process of senescence.

Some encouragement is afforded by the results obtained by Cleckley, Sydenstricker, and Geeslin (1939), who treated 19 patients with nicotinic acid. Of these, 12 were old, with advanced arteriosclerosis, presenting a clinical picture commonly attributed to arteriosclerotic encephalopathy; 5 showed marked deafness. All of them were suffering from hebetude amounting to profound stupor, which was a most prominent feature of the disease. Improvement obtained after the treatment was so remarkable that the authors conclude that "nicotinic acid was life-saving in all but one or two of the cases under discussion." The deafness was also much relieved, especially in two cases.

Another reason for investigating the effects of vitamins B complex and C on senile persons is based on the admission, accepted by most specialists in nutrition, that at the present time a partial deficiency of vitamins B and C is more widely prevalent among the populations of Europe and America than was previously thought. Corroboration of this, for example, is given by the deficiency of vitamin C, referred to above, in the blood, cerebrospinal fluid, organs, and urine of aged people.

Present Investigation

The total number of patients concerned in the clinical trial at the Littlemore Hospital was 58 (one patient left the hospital after Period III). The effects of vitamins B and C were studied on 40 patients (15 males and 25 females), while the remaining 18 (males) formed a control group receiving dummy pellets of lactic sugar. The investigation was of about a year's duration.

Vitamin B complex was given in the form of dried yeast specially prepared in the Government's Chemical Research Laboratory at Teddington, to the Director of which, Dr. G. S. Whitby, and to Dr. A. C. Thaysen, who was responsible for its preparation, we express our gratitude. The single dose was about 25 grammes, given as a sweetened suspension in water three times a week. The yeast was supplemented by tablets of pure crystalline vitamins, given three times a week in the following single doses: 5 or 3.3 mg. aneurin (B_1), 5 or 3.3 mg. lactoflavin, and 50 or 33.3 mg. nicotinic acid. We are most grateful to Prof. R. A. Peters, who suggested these doses. Vitamin C was given as pure ascorbic acid three times a week, each dose 200 or 300 mg. All crystalline vitamins B and C were supplied in generous amount by Messrs. Roche Products Ltd., to whom, and in particular to Dr. F. Bergel, we offer our thanks.

Observations on the 40 patients of the experimental groups were divided into five periods, each of 8 or 9 weeks' duration, during which examinations and tests were

repeatedly performed. These treatment periods alternated with rest periods of 10 to 14 days :

Period I (" Pre-treatment period ").—All patients.

Period II.—During this period vitamin B complex preparations were given to 20 patients (first group, 7 males and 13 females), and vitamin C to the remaining 20 (second group, 8 males and 12 females).

Period III.—The first group was now given vitamin C, and the second group vitamin B complex. Thus each of the 40 patients was receiving either vitamin B (" Vit. B Groups ") or C (" Vit. C Groups ") treatment. In the tables (p. 842) the results obtained from groups similarly treated have been pooled.

Period IV.—To all the patients of the experimental groups both vitamins B and C were given simultaneously (" Vits. B + C Group ") in the doses described above.

Period V.—" Post-treatment period " of 4 to 5 months, during which no treatment was given.

In the clinical investigation special attention was paid to changes in senile features (see later). In addition, blood examinations were made on the number of red cells and haemoglobin content. The urine was examined for albumin, casts, and sugar.

Dr. Stephenson applied psychological tests of psychomotor speed (tapping on three keys arranged in triangle fashion) and of psychomotor co-ordination (tapping with two hands co-ordinately on three keys). Besides this he tested (*a*) muscular power by dynamometer grip for each hand alternately, using the apparatus of Cheron and Verdin ; (*b*) compression power for left arm ; and (*c*) extension power for right arm, using apparatus devised and constructed by him, which will be described in detail elsewhere, together with the results of some additional psychological tests used (reaction to visual stimulus, card-sorting, and manual dexterity).

For economy of space we have tabulated only some of the clinical, psychological, and ergographic results, presenting them in the briefest possible way. Senile features not included in the tables will be discussed in the text.

Age and Condition of Patients

The average age of the patients in the treated group was 73, varying from 65 to 86 ; in the control group 71½, varying from 60 to 87. So far as was possible the patients were distributed evenly in the different groups according to their age and the severity of the senile changes, although these changes were on the average slightly fewer and less severe in the control group.

All the patients were suffering from dementia senilis, which, however, varied greatly in degree ; in some cases the dementia was secondary to a previous psychosis. Delusions complicated 13 cases and hallucinations 5 cases. Besides dementia senilis, some or all of the following usual features of senility or those that accompany ageing were present, and their changes were recorded during repeated examinations : increased bony prominences of the face, sunken eyes and cheeks, stooping, general weakness, flabby muscles, uncertain movements, tremors, stiffness of joints and of stretching and bending movements, shuffling gait, rheumatism, flabby shrunken genitalia, obliterated interosseous spaces, parchment skin, wrinkles, rashes, senile itchings, discoloration and pigmentation of skin, senile hair, dry mouth, fissured coated tongue, impaired digestion, constipation, flatulence, husky cracked voice, uncertain slow speech, shortness of breath, dim vision, arcus senilis, red conjunctivae, deafness, arteriosclerosis, varicose veins, haemorrhoids, oedematous eye sacs and ankles, weakened or lost control of bladder and bowel action, dullness of sensory nerve endings, easy chilling, daytime sleeping, and nocturnal insomnia. The number of patients showing some of these senile features is given in Tables I and II, column 2. Those features in which no numerous or pronounced changes were noted have not been tabulated, but will be mentioned in the text.

Excretion of Vitamin B_1 in Urine

The patients received the usual hospital diet, sufficient in calories but restricted in greens (three times a week), fruit, or fresh lettuce (once a week, if available). The vitamin content of the diet was limited. The amount of vitamin C in the organs and urine of aged people has already been repeatedly investigated by other workers, so it was decided to assay the amount of vitamin B_1 in the urine. Every effort was made to collect the whole of the twenty-four hours' urine and to mix it with preservatives (HCl and toluol) as quickly as possible after excretion. This was not easy to arrange with demented senile patients. Therefore, although the qualitative changes obtained in the different groups were clearly defined, the actual figures should be considered with some reservation. The assay of vitamin B_1 in the urine was performed by Dr. H. W. Kinnersley in Prof. R. A. Peters's Department of Biochemistry at Oxford University. We are most grateful both to Dr. Kinnersley and to Prof. Peters for their kind help.

In the urine of the control senile patients not treated with vitamins (16 patients were examined) an average of about 5 γ of vitamin B_1 was excreted during twenty-four hours ; in the urine of those treated with vitamin C (9 patients) about 6 γ, and in that of those treated with vitamin B complex (8 patients) 156 γ. The average excretion of vitamin B_1 in the urine of 25 young soldiers suffering from different mental diseases, in the same hospital, was about 34 γ, but their diet contained a little more of cooked and fresh vegetables. Therefore, without further investigations it is impossible to decide whether the very low figures of B_1 excreted in the urine of senile persons were due only, as is the case with vitamin C, to some disturbance in senile metabolism in which vitamin B is involved, or not. The average amount of urine excreted and collected in twenty-four hours was 1,335 c.cm. in control senile persons, 1,006 c.cm. in senile patients treated with vitamin C, 1,556 c.cm. in patients treated with vitamin B complex, and 1,667 c.cm. in the control young patients.

Body Weight and Fat Deposition.—Towards the end of the experiment there was a slight loss of body weight in both the control and treated groups, but no pronounced changes were observable in the subcutaneous fat of the patients.

Mental Condition

1. *Clinical Observations.*—In most cases the changes in mental condition were not great, but were quite definite. Where, for instance, " improvement " is recorded it consisted in a marked improvement or sometimes even in the disappearance of two or more, or all, of the following abnormalities : the patients became less incoherent and more intelligent in their talk, less depressed or less excited, less restless with fewer aimless movements, brighter and more friendly and sociable and less quarrelsome, and cleaner in their habits ; they started to recognize relatives and nurses, performed better work ; and nocturnal insomnia and day sleeping improved or disappeared. The percentage of improved cases was much greater and that of deteriorated cases considerably less in the treated (Table I) than in the control groups (Table II), and the number of improved cases grew steadily during the three successive periods of the treatment. After the treatment, although the change for the better was maintained in most of the improved cases, the number of deteriorated cases increased, including some of those which improved during the treatment. The improvement in a few of the treated cases was really remarkable. For example, in one case the patient before

TABLE I.—*Effect of Vitamin Treatment on Senile Features of 40 Patients*

Senile Features	Pre-treatment Period	Number of Patients with Senile Features during: Vitamin B Periods			Vitamin C Periods			Vitamins B + C Period			Post-treatment Period		
		Improvement Occurred	Deterioration Occurred	No Change	Improvement Occurred or Maintained	Deterioration Occurred or Maintained	No Change	Improvement Occurred or Maintained	Deterioration Occurred or Maintained	No Change	Improvement Occurred or Maintained	Deterioration Occurred or Maintained	No Change
Impaired mental condition	40	8	2	30	13	3	24	25	3	11	20	13	4
Stooping	38	12	3	23	9	4	25	21	2	14	6	19	12
Shuffling gait	25	13	0	12	16	0	9	19	0	5	10	8	5
Uncertain movements	22	12	1	9	12	1	9	17	0	4	13	10	2
Tremor in hands	22	10	2	12	6	3	14	19	0	4	4	19	3
Stiff joints and movements	25	11	3	14	10	0	15	20	2	6	6	18	3
Shortness of breath	23	7	3	14	8	1	15	9	4	13	2	12	12
Oedematous ankles	17	8	2	7	7	5	9	13	4	6	5	13	6
Oedematous eye sacs	30	20	1	9	21	1	10	25	2	5	6	22	5
Easy chilling	27	7	3	18	3	7	17	13	4	12	7	12	12
Skin rashes	13	8	1	5	6	0	7	10	2	5	5	9	3
Senile itchings	9	5	2	4	6	0	4	8	3	2	4	10	1
Insomnia	17	10	4	3	12	2	3	14	1	1	6	11	1
Constipation	14	6	1	8	10	0	4	11	0	3	5	13	2
Total No.	322	137	28	168	139	27	165	224	27	91	99	189	71
Change in total No. of features as compared with pre-treatment period	—	43%	9%	52%	43%	8%	51%	70%	8%	28%	31%	59%	22%

TABLE II.—*Changes in Senile Features of Patients of the Control Group examined before Administration of "Dummy" Tablets (Examination I) and 5 Months (Examination II) and 9 Months (Examination III) Later*

Senile Features	Number of Patients with Senile Features: Examination I	Examination II: Improvement Occurred	Examination II: Deterioration Occurred	Examination II: No Change	Examination III: Improvement Occurred or Maintained	Examination III: Deterioration Occurred or Maintained	Examination III: No Change
Impaired mental condition	18	1	5	12	1	7	10
Stooping	16	0	1	16	0	3	14
Shuffling gait	8	1	2	7	1	5	4
Uncertain movements	6	1	0	5	1	2	5
Tremor in hands	12	0	1	12	0	5	10
Stiff joints and movements	11	0	0	11	0	4	9
Shortness of breath	6	0	1	6	0	4	6
Oedematous ankles	1	0	3	0	1	2	2
Oedematous eye sacs	15	3	1	12	3	4	10
Easy chilling	8	0	0	8	1	2	7
Skin rashes and itchings	5	2	1	3	0	10	2
Insomnia	3	0	0	3	0	3	3
Constipation	1	0	0	1	0	2	1
Total No.	110	8	15	96	8	53	83
Change in total No. of features as compared with Examination I	—	7%	14%	87%	7%	48%	75%

the treatment had no control over her bladder and bowel, was dirty in her habits, very depressed and stuporous, showed no intelligence in her behaviour and talk, and did not recognize her relatives or the nursing staff. At the end of the treatment all these abnormalities had disappeared, except for occasional slight confusion in thought.

In the control group delusions were present in 6 patients and hallucinations in 2, and no improvement was recorded in any; in the treated group, in 5 out of 13 cases of delusion a pronounced improvement (in one case disappearance) was noted, and in 1 out of 5 cases there was a disappearance of hallucinations. It should be mentioned, however, that in the "post-treatment period" delusions returned in 4 patients—i.e., in the majority of cases the improvement lasted only during the period of treatment with vitamins. Nocturnal insomnia definitely improved or disappeared in a considerable number of cases (compare Tables I and II), while day sleeping was recorded less frequently in those who were subject to it.

2. *Psychological Effects* (W. Stephenson).—The objective results of the psychological tests (Table III, Tests 1 and 2) again corroborated the clinical observations and recorded a definite improvement in the mental condition of the treated group. The results of the psychomotor co-ordination test are perhaps particularly demonstrative, showing as they do some improvement, in a lesser degree, even in the post-treatment period.

TABLE III.—*Averaged Effects of Vitamin Treatment as shown by Psychological Tests and those of Muscular Power, compared with the Same Tests (performed at Approximately Two-months Intervals) on Control Senile Persons*

Tests	Periods of Observation on Controls: I	II	III	IV	V
	Periods of Observation on Treated Group: Pre-treatment	Vit. B	Vit. C	Vits. B + C	Post-treatment
1. Psychomotor speed:					
Control	100	100	101	105	99
Treated	100	109	113	110	103
2. Psychomotor co-ordination:					
Control	100	102	102	106	102
Treated	100	114	121	119	116
3. Dynamometer grip:					
Control	100	99	105	99	105
Treated	100	110	112	110	103
4. Averaged compression (left arm) and extension (right arm) power:					
Control	100	101	100	99	109
Treated	100	128	122	147	130

Note: The quantitative changes of the tests are expressed as percentages of initial score (taken as 100) of Period I in control senile persons; or, in the treated senile patients, as percentages of the pre-treatment period (also taken as 100).

Muscular System

1. *Clinical Observations.*—Muscular function definitely improved under the treatment (Table I) as judged by the favourable effects on stooping, shuffling gait, uncertain movements, tremor in the hands, and stiff movements. At the end of the "Vits. B + C period"-of the treatment improvement was such in the patients with mild or medium changes that these senile features completely disappeared or were present only in very slight degree—in the case of stooping in about one-quarter, uncertain movement in about three-quarters, shuffling gait, tremors, and stiffness of movement in about a half of all the "improved" cases shown in Table I. Hirata and Suzuki (1935) observed hypovitaminosis-C in patients suffering from progressive muscular atrophy. Treatment with vitamin C improved their condition considerably.

2. *Tests with Dynamometer and Ergographs* (W. Stephenson).—These tests corroborated the clinical observations and are particularly useful because their results can be

presented quantitatively. As the data for Tests 3 and 4 show (Table III), a distinct improvement was obtained during the treatment with vitamins B and C (the larger differences between the treated and control groups are statistically significant, as will be shown in a later, more detailed, paper on these tests). Ergographic results on arms (Test 4) were much more demonstrative than those with the dynamometer (hand grip, Test 3): this is most probably due to the greater sensitivity, greater reliability, and more comprehensive nature of the ergographic tests as compared with the less reliable and cruder dynamometer.

Cardiovascular System

There is a convincing amount of literature demonstrating a causative association between cardiovascular disturbances and partial deficiency of vitamin B_1. These symptoms are promptly cured by vitamin B_1 administration. The extreme form—"cardiac beriberi"—is very dangerous, but even the milder forms call for the closest medical attention. A good summary of the literature on the subject, with an account of their own cases, is given by Weiss and Wilkins (1936) and Weiss (1940). Weiss and Wilkins described these mild forms as various combinations of tachycardia, or vagus reflex irritability with bradycardia, sometimes with asystole and syncope, one-sided heart failure, peripheral arteriolar dilatation or vascular constriction, or vasomotor collapse. Histological changes were found to be similar to those described in "beriberi heart."

In our patients we have not noticed well-defined symptoms as described above. In two, however, *extrasystoles* which had been present for a long time before the treatment disappeared after the administration of vitamin B complex.

No constant or significant changes were observed in the "resting" *blood pressure* and *pulse rate*. Although varying in individual cases, the average figures obtained in all of the 40 patients were remarkably close. For example, the average systolic-diastolic pressure before the treatment was 170/95; at the end of each of the three succeeding periods of treatment the values were 169/86, 169/91, and 167/89 respectively. In the control group the average figures at the beginning and end of the observations were 165/89 and 154/82 respectively. No change was noticed in the degree of *arteriosclerosis* of the treated patients. Some definite improvement was indirectly recorded, however, in the function of the cardiovascular system, because the *shortness of breath* and *oedematous eye sacs and ankles* completely disappeared or were much improved in a large percentage of the cases, as shown by a comparison of the data in Tables I and II. No changes were noted in the condition of the *varicose veins* or *haemorrhoids* of our patients, in none of whom were these conditions severe. Krieg (1938) and Ochsner and Smith (1940) were able to decrease pain in the varicose veins and ulcers considerably, and Krieg even noticed a contraction of the varicose veins after administration of vitamin B_1. This latter, however, was not confirmed by Ochsner and Smith.

Skin and Hair

Dullness of the nerve endings in the skin was recorded in 28 of the treated patients; it improved in 9 cases, appeared in one new patient not previously suffering from it, and persisted unchanged in the remaining patients towards the end of "B + C period." In the control group no improvement was noticed in any of the patients; it persisted in 12 who had had it from the beginning, and newly appeared in 2 others. Complexion, wrinkles, and parchment-like skin were also unchanged, but the senile patchy pigmentation of the hands appeared to be less pronounced in most patients at the end of the third period of the treatment. Quite definite improvement or in some cases complete disappearance of senile skin itchings and rashes was recorded (Table I) in a considerable percentage of the treated cases, the highest figures being obtained when vitamins B and C were administered simultaneously. In the control group (Table II, Examination III) no such improvement was recorded.

In the literature some favourable results were recorded with vitamin B in skin diseases; for instance, pellagra rashes could be quickly improved by the administration of nicotinic acid and aneurin (Boyd Campbell and Allison, 1940). A good result was obtained by Kristensen and Vendel (1940) in the treatment of chronic eczemas with yeast extract, and by Madden (1940) in the case of psoriasis treated with aneurin.

No changes were noticed in the grey hair, growth of bristles, or baldness in the treated senile patients. The scarcity or absence of hair in the axilla was also uninfluenced.

Digestive Tract

The tongue was fissured or coated, or both, in 22 cases; by the end of the third period of treatment it became better or normal in about half of them, while dry mouth disappeared in only a few. Constipation was a symptom which improved or disappeared in most of the treated patients (Table I) but in none of the controls (Table II). The treatment had no effect on flatulence. No other serious disorders in gastro-intestinal function were noted. Satisfactory results in the treatment of cases of constipation with aneurin have repeatedly been published, and a good review of the literature on the subject has been given by Harris (1938). Gastro-intestinal distension and atonia have been found to be prominent features of aneurin deficiency both in men and in animals (Harris, 1938).

Other Senile Features Examined

Easy chilling improved or disappeared after combined treatment with vitamins B and C in about half of those cases in which this feature was present before the treatment (Table I); the body temperature did not on the average show any definite changes in all the five periods examined. Husky cracked voice, present in different degree in almost all the treated and control patients, became clearer in only 2 of the treated cases.

Uncertain slow speech persisted in 3 patients and appeared in 3 more of the control group at the end of the period of observation. In the treated group it was present before treatment in 11 patients, in 5 of whom it definitely improved or disappeared; but 2, not affected in this way before the treatment, had begun to suffer from it by the end of the third period.

Rheumatism, atrophied interosseous spaces, deafness, dim vision, arcus senilis, and red conjunctivae were not definitely changed in either the treated or the control group.

Red Blood Cells and Haemoglobin

Although varying in individual cases, there was on the average in the treated group a hardly significant increase of the red cells and haemoglobin during the treatment. (The respective figures were: before treatment—red cells 4,850,000, Hb 89; vitamin B groups, 5,090,000 and 92; vitamin C groups, 5,160,000 and 99; vitamin B + C groups, 5,110,000 and 93.) In the control group the decrease of red cells from 5,080,000 to 4,930,000 and of Hb from 93 to 89 was also insignificant.

Post-treatment Period

If the data of the "post-treatment period" (Table I) are compared with those of the previous periods in the experimental group and with those of the last examination

in the control group (Table II), it becomes clear that certain typical changes occurred after the end of the treatment. Thus about four months after the treatment finished considerable deterioration had occurred, consisting in particular of disappearance of the improvement obtained during the treatment, and also of the appearance of some new cases of deterioration. This indicates that in some cases improvement of certain senile features and prevention of further senile deterioration can be maintained only if treatment with the vitamins is continued. In spite of this relapse in a number of cases, however, in numerous others the improvement obtained by the vitamin treatment was maintained after its discontinuation. This was demonstrated by the clinical observations (Table I), the psychological test (Table III, Test No. 2), and the ergographic test (Table III, Test No. 4).

Experiments on deficient animals have shown that the specific effects of vitamins B and C do not last long after the end of the administration of these vitamins. Therefore it is most probable that the explanation of the lasting action of the vitamins in some of the senile patients lies in the disruption of those secondary vicious circles which are originated by pathological changes in different organs (e.g., sex glands, adrenals, gastro-intestinal canal, liver, etc.), changes in these organs in their turn being produced by the direct action of vitamin deficiency. These secondary pathological conditions, being specific for dysfunction of the affected organs, become additional to those caused by pure vitamin deficiency proper. Of course, when the effects of the discontinued vitamin treatment have worn off, the repair of the organ concerned disappears after some time and the secondary vicious circles return.

Summary

Forty senile patients were treated with vitamins B complex and C, the whole period of observation lasting for about a year. The condition of these patients was compared with that of 18 senile patients of a control group receiving dummy tablets. All patients were on a usual hospital diet not rich in vitamins.

Treatment with vitamins B and C, as with any other remedy, did not stop the biologically inevitable development of senility, and therefore did not affect those basic features which are specific for and present in even the most physiological type of senility.

By treating the aged people with vitamins, however, it was possible to prevent or improve, in some cases to a striking degree, certain of those senile features which could be considered as pathological, because they appear prematurely or in an extreme degree (e.g., muscular, cardiovascular, and mental deterioration) or which do not seem to be inevitable in normal physiological senility (e.g., dementia, insomnia, skin rashes and itchings, constipation).

During the period of observation improvement or disappearance (apparently not of a lasting nature) of some pathological senile features was observed in numerous cases, while a number of other cases were not improved by the treatment, and a few patients who had been free from certain senile features developed them during and notwithstanding the treatment.

In spite of the comparatively limited and modest results which aged people might expect from treatment with vitamins, it seems clear that in suitable cases the relief obtained in some pathological senile features might be considerable.

The results obtained provide strong support to the argument, repeatedly emphasized by several specialists in the modern science of nutrition, that the greatest care should be taken to prevent the occurrence of partial or latent vitamin deficiency, apparently widely spread in the population. This will result not only in the prevention of certain vitamin-deficiency diseases but probably also in the approach to a less pathological senility.

We are most grateful to Dr. R. W. Armstrong, medical superintendent of the Littlemore Hospital, for all the help and facilities given during this research, and to Messrs. Arthur Guinness, Son and Co., in particular to Mr. Case, for a small grant to cover the expenses. We also express our gratitude to Prof. F. R. Fraser for his interest in the research and criticism of its scheme and of the paper. Dr. Korenchevsky is indebted to the Medical Research Council and the Lister Institute for personal grants.

REFERENCES

Altmann, O., and Goldhammer, H. (1937). *Klin. Wschr.*, **16**, 1793.
Bakke, A., Aschehoug, V., and Zbinden, C. (1930). *C. r. Acad. Sci.*, Paris, **191**, 1157.
Berkenau, P. (1940). *J. ment. Sci.*, **86**, 675.
Bersot, H. (1936). *Rev. neurol.*, **65**, 234.
Campbell, S. B. B., and Allison, R. S. (1940). *Lancet*, **1**, 738.
Cleckley, H. M., Sydenstricker, V. P., and Geeslin, L. E. (1939). *J. Amer. med. Ass.*, **112**, 2107.
Gander, J., and Niederberger, W. (1936). *Münch. med. Wschr.*, **83**, 1386.
Gorter, F. J. (1934). *Nature*, **134**, 382.
—— (1935). *Z. Vitaminforsch.*, **4**, 277.
György, P. (1935). *Biochem. J.*, **29**, 741.
Harris, L. J. (1938). *Vitamins and Vitamin Deficiencies*, **1**, 73, London.
Hartwell, G. A. (1923). *Biochem. J.*, **17**, 547.
Hirata, Y., and Suzuki, K. (1935). *Orient. J. Dis. Infants*, **17**, 83.
Krieg, E. (1938). *Münch. med. Wschr.*, **85**, 9.
Kristensen, K. P., and Vendel, S. N. (1940). *Lancet*, **1**, 170.
Lunde, G., and Kringstad, H. (1939). *Hoppe-Seyl. Z.*, **257**, 201.
McLester, J. S. (1939). *J. Amer. med. Ass.*, **112**, 2110.
Madden, J. F. (1940). Ibid., **115**, 588.
Malmberg, M., and Euler, H. v. (1935). *Hoppe-Seyl. Z.*, **235**, 97.
Marinesco, G., Alexianu-Buttu, G., and Olteanu, I. (1936). *Bull. sci. Acad. roumaine*, **17**, 129.
Mohammad, A., Emerson, O. H., Emerson, G. A., and Evans, H. M. (1939). *Science*, **90**, 377.
Monauni, J. (1937). *Z. ges. Neurol. Psychiat.*, **157**, 636.
Morgan, A. F. (1941). *Scientific Monthly*, p. 416.
—— Cook, B. B., and Davison, H. G. (1938). *J. Nutrit.*, **15**, 27.
—— and Simms, H. D. (1939). *Science*, **89**, 565.
—— —— (1940). *J. Nutrit.*, **19**, 233.
Niemes, P., and Wacker, L. (1922). *Arch. exp. Path. Pharmak.*, **93**, 241.
Ochsner, A., and Smith, M. C. (1940). *J. Amer. med. Ass.*, **114**, 947.
Oleson, J. J., Elvehjem, C. A., and Hart, E. B. (1939). *Proc. Soc. exp. Biol.*, N.Y., **42**, 283.
Plaut, F., and Bülow, M. (1935). *Z. ges. Neurol. Psychiat.*, **152**, 324.
—— —— (1936). Ibid., **154**, 481.
Remp, D. G., Rosen, S. R., Ziegler, J. B., and Cameron, D. E. (1940). *J. ment. Sci.*, **86**, 534.
Schroeder, H. (1939). *Münch. med. Wschr.*, **86**, 133.
Spies, T. D., Hightower, D. P., and Hubbard, L. H. (1940). *J. Amer. med. Ass.*, **115**, 292.
Weiss, S. (1940). Ibid., **115**, 832.
—— and Wilkins, R. W. (1936). *Trans. Ass. Amer. Phys.*, **51**, 341.
Williams, R. D., Mason, H. L., Wilder, R. M., and Smith, B. F. (1940). *Arch. intern. Med.*, **66**, 785.
Wortis, H., Wortis, S. B., and Marsh, F. I. (1938). *Arch. Neurol. Psychiat.*, Chicago, **39**, 1055.
Yavorsky, M., Almaden, P., and King, C. G. (1934). *J. biol. Chem.*, **106**, 525.

THE VALUE OF BLOOD TRANSFUSION IN MALIGNANT DIPHTHERIA

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Judging by the lack of any published reports in English medical literature on the value of blood transfusion in malignant diphtheria, it would seem that this method of therapy has received little or no attention in this country. On the other hand, a review of the available literature goes to show that the subject has engaged the attention of certain Continental workers for some time.

Baar and Benedict (1933) treated 43 cases of malignant diphtheria with either "human serum" or blood transfusion. All the cases selected for treatment by transfusion were rigorously classified, nor were desperate cases with cardiac insufficiency discarded. Twenty-seven of the 43 cases recovered, giving a case mortality of 37.2%. The authors claimed that transfusion reduced the mortality rate of malignant diphtheria by one-half.

Moeller (1934) tried the method of giving blood in the proportion of 1/70 of the patient's weight. In all he transfused 19 cases: 5 were transfused late in the illness (6th, 7th, or 8th day), and of these four died; 2 were moribund on admission and died; of the remaining 12 cases, 7 survived. Moeller calculated the mortality rate at 41% in the transfused cases and at 66% in the non-transfused, but intimated that the number of cases was too small for any firm conclusions.

Darrow and Yannet (1935) emphasized the value of blood transfusion in malignant cases as a method of combating the

early toxaemic manifestations which in many respects were analogous to those of shock, and also in the maintenance of nutrition in those cases in which persistent vomiting precluded oral feeding.

The present investigation into the value of blood transfusion in malignant diphtheria was carried out during the 1940 epidemic of diphtheria in Swansea, which was characterized by the prevalence of malignant cases. The report is based on 40 malignant cases admitted to hospital between July, 1940, and January, 1941, of which 20 consecutive cases, admitted during the three months November, 1940, to January, 1941, were transfused.

Clinical and Therapeutic Considerations

It seems hardly necessary to recall here the clinical features of malignant diphtheria, since these are admirably described in modern textbooks on infectious diseases. We would mention briefly that the term " malignant " is applied to an unusually toxic form of diphtheria. The patient is as a rule apathetic and drowsy, and takes little interest in his surroundings. Locally there is extensive membrane, involving the tonsils, pillars, palate, and uvula, and extending on to the nasal mucosa, together with faucial and palatal oedema and redness, the oedema at times being so pronounced as to mask the real extent of the membrane. A profuse purulent or sanious nasal discharge is common and results in nasal obstruction and oral breathing. Swelling of the cervical glands and periglandular tissues is considerable. Fetor is marked. Haemorrhage into the skin and from mucous surfaces is not uncommon. As a rule such cases show a slow response to specific treatment with antitoxin. The mortality is often as high as 50%, and those patients that recover usually suffer severe paralysis.

Up to November, 1940, malignant cases were treated at this hospital upon the following lines:

1. Prompt administration of a large dose of concentrated antitoxin, intravenously if possible, and partly intramuscular.
2. Intravenous infusion of 10% glucose in saline.
3. Absolute rest in the flat position with the foot of the bed raised.
4. Glucose drinks by mouth, except in those cases in which vomiting was troublesome and persistent, when oral feeding was stopped and salines with 5% glucose administered rectally.
5. Strychnine daily.

In spite of intensive antitoxic therapy it was felt that its value in malignant cases was limited, and in November, 1940, it was decided to investigate the possibilities of blood transfusion. The first case transfused responded so well that it was decided to continue with the investigation, and during the ensuing three months until the subsidence of the epidemic towards the middle of January, 1941, in all 20 consecutive malignant cases were transfused. Apart from the substitution of blood transfusion for the intravenous administration of glucose and saline, the treatment of the 20 transfused cases was strictly comparable in all other respects to that given to malignant cases admitted before November, 1940.

Transfusion Technique

Transfusion was performed as soon as possible after the admission of the patient to hospital, and in each case the total volume of blood given was approximately one pint. Stored citrated blood was used throughout, and whereas 14 of the cases were grouped beforehand and received blood of the same grouping, this preliminary was omitted in the case of 6 desperately ill patients who were transfused with Group O blood. The apparatus used for giving the blood was the Medical Research Council's blood transfusion outfit, and owing to the collapsed nature of the veins it was found necessary in each case to cut down on the vein. The blood was given cold, and in order to avoid overloading an already embarrassed myocardium the rate of flow was slow, the average duration of transfusion in the 20 cases being two hours.

Plan of Investigation

The object of this paper is to compare the results obtained in respect of 20 transfused cases (test series) with a similar number of consecutive cases of malignant diphtheria treated by the orthodox method outlined above, and which were admitted during the four months July to October, 1940 (control series). It is proposed to compare the results in the two series of cases with regard to the following criteria: mortality rate, immediate response to treatment, incidence and severity of complications, and total duration of stay in hospital.

Since the validity of such a comparison might easily be influenced by such factors as (1) the real extent of malignancy in individual cases and the amount of antitoxin administered, (2) the age and sex distribution of the patients, and (3) the duration of the disease before admission to hospital, these must first be briefly considered.

All the cases were under the direct supervision of one of us (I. P.) throughout, and they all received the same nursing attention. All were rigorously classified on admission, and their malignancy may be gauged from the fact that the total amount of antitoxin given in the test series and control series averaged 110,000 and 112,000 units per case respectively. In no single case was the total dosage of antitoxin under 100,000 units. That the two series were fairly comparable regarding age and sex distribution can be seen from Table I. Table II gives the day of disease on admission, and it will be noted that whereas all the cases in the control series were admitted on the second and third days, 5 in the test series were admitted later than the third day of illness.

TABLE I.—*Age and Sex Distribution*

Age	Test Series		Control Series	
	Males	Females	Males	Females
3–4 years	1		1	1
4–5 ,, ...		1	1	2
5–10 ,, ...	4	9	6	1
10–15 ,, ...	2	2	2	5
15–20 ,, ...		1		1
Total	7	13	10	10

TABLE II

	Day of Disease on Admission				
	1st	2nd	3rd	4th	5th
Test cases		6	9	4	1
Control cases ..		10	10		

Results

Mortality Rate.—Out of the 20 cases treated by blood transfusion in the test series there were 2 deaths, giving a case mortality of 10%, whereas in the control series there were 7 deaths and a case mortality of 35%. Of the 2 patients who died in the test series, one was moribund on admission and died the same day, a few hours after transfusion. The second died during the sixth week of the illness. At this time the patient was suffering from pharyngeal paralysis, and death occurred from cardiac failure as the result of an unfortunate attempt to institute nasal feeding. In the control series 5 patients died of profound toxaemia during the first week, while the other two fatalities were due to cardiac failure during the second week. Table III gives the number of deaths at different age periods.

TABLE III

Age	Test Series		Control Series	
	Cases	Deaths	Cases	Deaths
3–4 years	1		2	
4–5 ,,	1		3	2
5–10 ,,	13	2	7	2
10–15 ,,	4		7	3
15–20 ,,	1		1	
Total	20	2	20	7

Immediate Response to Treatment.—A noticeable feature of the test series was the rapidity with which most of the cases responded to treatment as compared with the control series. It was noted in most of the transfused cases that during the days immediately following the giving of the blood the patient's apathetic and drowsy aspect was transformed into a bright and keen appearance, and the nasal discharge, the periadenitis, and the membrane rapidly cleared up, whereas such a rapid clinical improvement was not so prominent in the control series.

Complications.—As regards the incidence and severity of complications in the recovered cases, the test series followed a more favourable course: of the 18 cases that recovered 4 were uncomplicated; the other 14 developed a total of 33 complications. In the control series all 13 recovered cases developed complications, with a total of 44 complications. Although complications of a mild character were common to both series, the more severe types, including cardiac irregularities, pharyngeal paralysis, and severe peripheral neuritis, were more prominent in the control series (Table IV).

TABLE IV.—*Complications in Recovered Cases*

		Test Series No.	Control Series No.
Recovered cases		18	13
Uncomplicated recovery		4	0
Complicated recovery		14	13
Complications:			
Mild	Precocious palatal paresis		1
	Palatal paresis	8	5
	Paralysis of accommodation	1	
	Facial paresis		1
	Squint	2	2
	Absent or sluggish reflexes	8	10
Severe	Pharyngeal paralysis	3	7
	Weakness and wasting of limbs		2
Second week cardiac failure		1	3
Late cardiac irregularities		1	4
Albuminuria		6	9
Secondary cervical adenitis		1	
Otitis media		2	
Total complications		33	44

The incidence of paralysis in both test and control series is approximately equal, being 55% and 60% respectively. When, however, the severer forms of paralysis are considered alone it is found that they predominate in the control series, their incidence in this group being 35% as compared with 15% in the test series.

Duration of Stay in Hospital.—Table V gives the duration of stay in hospital of the recovered cases. Transfused cases made a more rapid recovery, the average duration of stay being 10 weeks as compared with an average duration of 13 weeks in the control series.

TABLE V.—*Length of Stay of Recovered Cases*

Weeks:	8	9	10	11	12	13	14	15	16
Test cases	6	3	3	2	1	3		1	6
Control cases		2	3		1				

Reactions following Transfusions.—Among the 20 cases transfused 3 developed a mild febrile reaction with a rise of temperature up to 100° F. soon after the giving of blood. In only one case was a definite rigor encountered.

Comments

In the 40 cases of malignant diphtheria under review it appears that following the introduction of blood transfusion, on the whole, the immediate clinical response of the patients to specific therapy was accelerated. Not only was the case mortality reduced from 35% to 10%, but there was a decided decrease in the incidence of the severer forms of paralysis, and the duration of stay in hospital of recovered cases was appreciably reduced. Admittedly the number of cases transfused is small, and we fully realize that in such circumstances the results are open to serious criticism. Nevertheless, we maintain that the results are sufficiently encouraging to warrant further investigation into the possibilities of blood transfusion in the treatment of malignant diphtheria.

Summary

The available literature on the use of blood transfusion in malignant diphtheria is reviewed.

The main clinical features of malignant cases are outlined.

The present investigation deals with a series of 40 consecutive cases of malignant diphtheria. The first 20 were treated in the usual orthodox manner; in the others treatment was supplemented with blood transfusion.

The transfusion technique adopted is described with special reference to the form of apparatus used, and the type, volume, and rate of administration of the blood.

The results obtained in the two series are compared, and it is suggested that the results for the transfused series are sufficiently encouraging to merit further investigation into the value of blood transfusion as a therapeutic measure in malignant diphtheria.

We desire to thank Dr. H. R. Tighe, medical officer of health, Swansea, for permission to publish this report. Our thanks are also due to Dr. A. P. Sladden, director of the Beck Laboratory, Swansea General Hospital, for his encouragement, help, and advice throughout this investigation, and to Dr. Joan Drury, assistant pathologist, Swansea General Hospital, whose friendly co-operation made this work possible.

BIBLIOGRAPHY

Auffenberg, H. (1934). *Kinderärztl. Prax.*, **5**, 97.
Baar, H., and Benedict, H. (1933). *Acta paediatr.*, Stockh., **16**, 433.
Benedict, H. (1932). *Klin. Wschr.*, **11**, 1549.
Brugsch, H. (1935). *Med. Klinik*, **31**, 243.
Catel, W. (1934). *Dtsch. med. Wschr.*, **60**, 424.
Comby, J. (1934). *Arch. Méd. Enf.*, **37**, 65.
Darrow, D. C., and Yannet, H. (1935). *Amer. J. Dis. Child.*, **49**, 60.
Dimmel, H. (1933). *Med. Klinik*, **29**, 1578.
Hacker, E., and Garcia Oliver, G. (1933). *Mschr. Kinderheilk.*, **57**, 113.
Kiss, P. von (1934). *Arch. Kinderheilk.*, **101**, 84.
Moeller (1934). *Mschr. Kinderheilk.*, **61**, 43.
Rietschel, H. (1933). *Münch. med. Wschr.*, **80**, 1927.
Ringenbach, G. (1937). *J. méd. Bordeaux*, **114**, 740.
Seckel, H. (1934). *Med. Welt*, **8**, 254.
—— (1935). *Med. Klinik*, **31**, 1603.

J. S. Simmons (*South. med. J.*, 1941, **34**, 62) states that early in 1940 the Surgeon-General requested that the chairman of the Division of Medical Science of the National Research Council should appoint committees composed of civilian leaders in the various medical specialties to advise the U.S. Army concerning its emergency problems. Another important health measure was instituted in February, 1940, when the Public Health Service was authorized to co-operate with the Army by improving sanitation and disease control in civilian areas adjacent to military stations and concentrations. The Surgeon-General has also obtained the assistance of the American Medical Association in classifying the medical personnel of the country and determining the availability of physicians for service in civil life and in the Army. The paper contains brief notes of the procedure applicable to (1) immunization of all military personnel against small-pox, typhoid and paratyphoid, and tetanus; (2) immunization against localized outbreaks of endemic disease such as scarlet fever; (3) immunization against uncommon and dangerous diseases to which the troops might be exposed at home and abroad—such as yellow fever, cholera, plague, and typhus.

SACRO-ILIAC STRAIN

BY

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The uncertainty that surrounds the vexed question of sacro-iliac strain has provided a basis for much quackery. While some authorities doubt its very existence, others hold it to be a common cause of backache and of pains felt radiating down the lower limb. Bone-setters and osteopaths have no misgivings, and habitually postulate the existence of subluxation of the ilium as a pretext for mobilizing the joints of the lower back. Confusion of this sort can spring only from great individual variations in the criteria held to justify this diagnosis. When tenderness "over the joint" suffices, strain is found to occur in a fair proportion of all patients with backache; but when this diagnosis is restricted to cases showing a positive response to one or more of the tests set out below, the fraction is found to be very small. This paper seeks to show how a diagnosis of sacro-iliac strain may be limited to cases in which the pain arises in the sacro-iliac ligaments.

Incidence.—Adherence to the diagnostic standards described below enabled the presence of sacro-iliac strain to be determined in 3 out of the 420 patients with symptoms referable to the lumbo-sacro-gluteal region seen in the physiotherapeutic department of St. Thomas's Hospital during the past two years. During the same period I have also seen two such cases in private practice. Hence the frequency of sacro-iliac strain as a cause of such pains is estimated not to exceed 1%. I have yet to see this condition affect a male patient.

Summary of Findings in a Series of Five Cases

The following table gives the salient features of five patients who, between them, had suffered six "attacks" of sacro-iliac strain.

Occupation	Age at Onset	Cause	Parity	Length of History (Months)	Side	Pain on Waking	Pain referred to	Tender Area	Palpable Subluxation	Control by Corset
1. Housewife	41	?	0	8	R.	No	Thigh, leg, and heel	All over sacrum	No	Yes
2. Physical training instructress	21	Twist in mid-air while vaulting	0	3	Both	?	?	?	?	Not tried
	33	Childbirth	1	12	,,	No	Iliac fossae	None	Yes	No
3. Housewife	27	,,	3	25	,,	Yes	Hypogastrium	"Over joint"	,,	Yes
4. Masseuse	21	?	0	3	,,	,,	Sacral only	,, ,,	,,	,,
5. ,,	22	?	0	1	,,	No	,, ,,	None	No	,,

All five were women of childbearing age. Recovery after three months' rest in bed was followed in one case by recurrence twelve years later during the first puerperium. Strain began after the birth of her third child in another patient—a treated congenital syphilitic. The influence of trauma seemed negligible: only one patient gave such a history, and then the injury appeared too slight to have done more than make manifest a laxity already in existence. In three instances the onset was gradual and no cause was discoverable. A feature common to all patients was the unusually large range of movement at the lumbar spine; this suggested that the sacro-iliac laxity formed part of a more widespread suppleness.

Symptoms and Signs of Sacro-iliac Strain

The outstanding symptom is a deep sacral ache, aggravated by exercise and relieved by rest; three patients were free from pain on awaking in the morning. Pain was referred to the lower part of the abdomen in two cases, and to the thigh, leg, and heel in another. The fourth and fifth patients had a purely sacral ache.

No patient volunteered the information, but questioning after making the diagnosis elicited the fact that clicking followed by increased pain had been noticed in three cases. Two patients had realized that the pain could be eased by provoking another click, and had discovered methods of reducing the subluxation. One fixed her pelvis by standing with her legs crossed, and gave her trunk a quick twist; the other knelt with her thighs pressed against the abdomen.

The signs of sacro-iliac strain are as follows:

Pain on Stretching the Anterior Sacro-iliac Ligaments.—The anterior superior spines of the ilia are pressed apart while the patient lies supine. This test proved as reliable as any; for pain was easily provoked thus in four cases. In the fifth no pain was elicited by any tension put upon the sacro-iliac joint except rotation, but palpable subluxation occurred (see below). Since a negative response to this test appears to exclude the sacro-iliac joint as the source of pain with reasonable certainty, this manœuvre suffices during the routine examination of the lower back. Renewed search for the further signs described below is necessary only when the examination of adjacent structures fails to disclose the site of the lesion.

Pain on Stretching the Posterior Sacro-iliac Ligaments.—The patient lies on her side, and the uppermost part of the iliac crest is pressed downwards. If the pressure is applied well forwards along the bone the posterior ligaments bear the greater stress. Pain was elicited thus in three cases; moreover, it was felt less certainly. Though this test is less delicate than that described above, it possesses the advantage of not pressing the sacrum against the couch, thereby obviating confusion between pain due to pressure on a tender area and that due to stretching the ligaments.

Pain on Attempting Forward Luxation of the Sacrum.—The patient lies prone, and pressure is applied centrally over the sacrum. This is a good test; it yielded a positive result in four cases and a doubtful result in the fifth.

Pain on Forcing Rotation at the Joint.—A rotation strain cannot be put upon the joint without also straining the lumbar spine or the hip-joint towards extension. Since the chief diagnostic difficulty lies in distinguishing between lumbo-sacral and sacro-iliac conditions, this test has little practical value, though pain thus elicited was present in every case.

Signs of Sacro-iliac Laxity

Presumably strain is merely the early stage of laxity, before excessive movement becomes apparent. In three bilateral cases laxity was demonstrated; in one bilateral and one unilateral case only the signs of strain were present.

Palpable Subluxation.—As the patient lies prone the ilium is pulled backwards by the examiner's one hand about the anterior superior spine, while the other presses the sacrum forwards. This manipulation may succeed in producing palpable movement at the joint; if so, an unpleasant crunch occurs, reminiscent of the sensation produced by fractured bone-ends rubbing together. Three cases showed this sign.

Radiography during Subluxation.—This did not prove possible in any case, and the radiographic appearances were consistently normal. Sacro-iliac strain, therefore, is a diagnosis that can be arrived at only on clinical grounds. The fact that subluxation can be produced in the manner described above,

considered in conjunction with the way in which patients had learnt to achieve reduction, leads to the conclusion that the abnormal movement is towards posterior displacement of the ilium on the sacrum.

Tenderness "Over the Joint"

A glance at the diagram giving the relations of the sacro-iliac joint should finally dispose of the idea that tenderness of any structure accessible to the examiner's finger denotes tenderness of the sacro-iliac ligaments. Nevertheless, tenderness "over the joint" was present in three of the five cases, though the tender structure was clearly the sacral part of the sacrospinalis muscle. Evidently the movement apart of the sacrum and ilium puts lateral stresses upon the

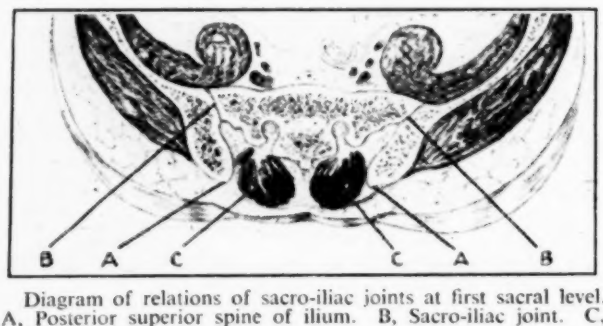

Diagram of relations of sacro-iliac joints at first sacral level. A, Posterior superior spine of ilium. B, Sacro-iliac joint. C, Sacrospinalis muscle.

fibres of origin of this muscle, causing a series of minor tears in this position. Hence a chronic traumatic fibrositis is set up, and is the proximate cause of the tenderness.

Tenderness "over the joint" is in no sense a sign of sacro-iliac strain, for it occurs far more commonly in fibrositis of the lowest part of the sacrospinalis muscle and its sheath, in the absence of any sacro-iliac affection. A diagnosis of true sacro-iliac strain is made on grounds quite other than the existence of such tenderness, whose presence is to some extent confirmatory, but whose absence is without significance. As a rule, loosely made diagnoses of sacro-iliac strain can be shown to be incorrect by the simple expedient of infiltrating with a local anaesthetic solution the muscle fibres lying behind the joint. If cessation of pain for the duration of anaesthesia results the site of the lesion evidently lies in the muscle. The objection that it is possible to be mistaken as to the position of the point of a needle is met by the fact that no one can fail to perceive the wide difference between muscle and dense fibrous tissue both in the resistance they offer to the progress of a needle and in the degree of pressure needed for their respective infiltration.

Clinical Course of Sacro-iliac Strain

The strain in Case 1 had been present for eight months when this patient was first seen. A corset was worn for a year, and she is now symptom-free without a corset. The laxity in Case 2 at the age of 21 cleared up completely after rest in bed for three months. The recurrence at the age of 33, after childbirth, has now continued unchanged for twenty months in spite of corsetry for the past eight months. Arthrodesis will be performed as soon as the patient can arrange to leave home. The laxity in Cases 3 and 5 is adequately controlled by a corset, which is still being worn. It is obvious that progress is being made towards freedom from pain in the absence of corsetry. The laxity in Case 4, though considerable in degree and in the amount of disability present, had improved so much after only one month's corsetry that this could be discarded for several hours a day without ill effect.

Treatment

The sacro-iliac is like the acromio-clavicular joint in that no muscle spans it; hence each relies for stability on its capsular ligaments alone. Mobilization of the joint leads to further overstretching and increased pain; indeed, the stresses put upon the joint by its mere clinical examination temporarily aggravate the symptoms. The fact that mobilization has cured "sacro-iliac strain" by supposedly adjusting the position of the ilium on the sacrum is in itself strong evidence that such strain was not present. All the manipulations calculated to move the ilium on the sacrum, as anyone who watches an osteopath can see, stretch or rotate the lumbar spine. Hence cure by mobilization suggests that the pain had a lumbar origin.

In true sacro-iliac strain, then, stretching the joint makes the patient worse. Immobilization is required, and is best obtained by a corset that holds the ilia firmly against the sacrum. It should be worn day and night until the pain on waking disappears; thereafter it need be worn only by day. After several months, if full relief has been attained meanwhile, the patient may try increasing periods up and about without the corset. Throughout she should be warned to do nothing that hurts, and to rest at once if pain begins. Since no muscle controls movement at the joint, exercises are contraindicated; for they can serve only to strain the ligaments further. Since a laxity absent for twelve years reappeared after childbirth in one case, it is evidently wise to prescribe adequate corsetry for several months before and after the confinement as a prophylactic measure in patients who have suffered from true sacro-iliac laxity in the past.

When repeated subluxations add to the patient's pain she should be shown one or other of the methods of reduction already described. Attempts at forcing by the practitioner are unwise, in so far as they are at best only momentarily successful; they are more apt to result in a prolonged increase in the symptoms.

Corsetry and the avoidance of all activity that sets up pain proved successful in four out of the five cases cited here, and progress towards full relief without a corset has been, or is being, achieved. Patient No. 2, though waking symptom-free, found a corset useless to prevent the regular onset of pain about two hours after rising. Since prolonged rest in bed—the only other conservative treatment—is impracticable, arthrodesis will be performed.

Discussion on Aetiology

When a ligament the tension on which is not under muscular control has been sprained, any overstretching thus caused is permanent. For example, it is a commonplace that lengthening of the cruciate ligaments of the knee, or of the capsule of the acromio- or sterno-clavicular joints, persists indefinitely. Now the sacro-iliac joint is not under muscular control; yet its laxity appears not to be due to injury, not to affect men, usually to be bilateral, to have some connexion with pregnancy, and to be recoverable from completely. These facts suggest that the cause is non-traumatic, general, peculiar to women, and temporary. It is interesting, therefore, to speculate on the possibility of an endocrine element in the aetiology of sacro-iliac strain. Evidence of very slight lengthening of the ligaments towards the end of pregnancy has been demonstrated and measured radiographically. The existence of a special hormone of the corpus luteum—relaxin—has been suggested to account for this change, which is strikingly large in some animals. Hence, sacro-iliac strain may in the future come to be regarded as due to a temporary over-

secretion of this hormone, and thus in essence a medical rather than a surgical condition. An increase in the distance between the bones at the symphysis pubis, had it been visible on the radiographs, would have afforded valuable confirmation of this hypothesis, but was not in fact demonstrable.

My thanks are due to Mr. R. H. Young, my senior colleague at St. Thomas's Hospital, for his advice and for assistance in the diagnosis of two of the cases.

CONGENITAL ARTERIOVENOUS ANASTOMOSIS

BY

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Cases of congenital arteriovenous anastomoses in the limbs have been recorded by Reid (1925), de Witt Lewis (1930), Holman (1937), and others. Most of these, however, had an associated surface naevus, which was not present in the following case. The existence here of an arteriovenous communication is suggested by the slowing of the pulse after reducing the arterial flow through the anastomosis by occlusion of the right common femoral artery. Lewis and Drury (1923) suggest this fall in rate is vagal in origin.

Case Report

The patient, a girl aged 8, was an only child of healthy parents, who stated that since birth they had noticed that their child's right leg was bigger and hotter than the left. Apart from this the limb had given no trouble until two days before she was seen, when a "milky discharge" had appeared in the right groin. This was painless and did not follow any known injury. She had always been healthy except for scarlet fever, measles, and an attack of catarrhal jaundice.

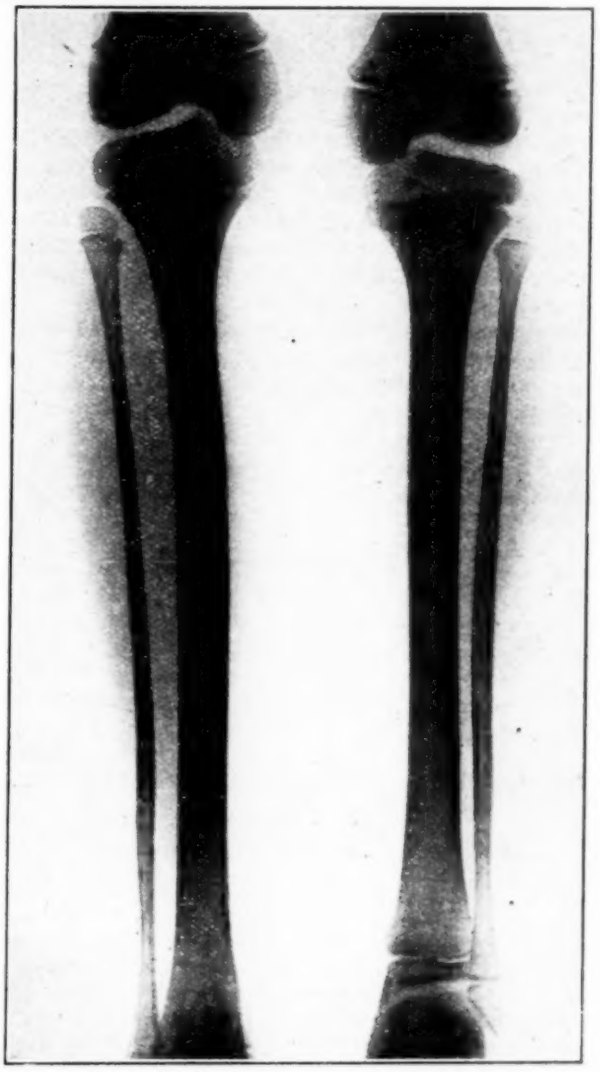
When she first attended the out-patient department the girl's general condition was good apart from discomfort from the discharge. This came from a pin-point opening on the inner side of the right thigh, about the apex of Scarpa's triangle, and was quite profuse, 1 c.cm. being easily collected in a test-tube. Her clothing, though changed about two hours previously, was soaked. There was no obvious sinus and no reddening or thickening of the skin. Her right leg was larger and warmer to the touch than the left.

She was admitted to the ward for further observation, but by the following morning the discharge had ceased; it never recurred in spite of massage and exercise of the limb, nor could we find the opening through which it had come. She had never had this trouble previously, nor has it recurred since she was seen last April. The fluid collected was reported on by Dr. Gough as follows: "The appearance is that of a pale yellow milky opaque fluid with a clot stained faintly pink on standing. The cell count is 1,600 per c.mm., all lymphocytes. No organisms were seen, and nothing was grown on culture. The fluid contains only a little fat. It is not 'chyle,' but may be a fluid from a lymphangiectasis."

Examination of the right leg showed that throughout its whole length it was larger and warmer to the touch than the left. The measurements of the limbs and bones were as follows:

	Right Leg	Left Leg
Iliac crest to heel	29¾ in.	27¼ in.
Iliac crest to tibial spine	16½ in.	15 in.
Tibial spine to big toe (foot extended)	17½ in.	16½ in.
Length of foot	8 in.	7¼ in.
Maximum circumference of thigh	14 in.	12 in.
Maximum circumference of leg	9 in.	8¼ in.
Radiograph of both tibiae on single film:		
Length of tibia	12¼ in.	11 in.
Breadth of head of tibia	2¼ in.	2 in.
Breadth of shaft of tibia	3/4 in.	11/16 in.
Breadth of shaft of fibula	1/4 in.	1/4 in.

Pulsation was felt behind the inner border of the right tibia almost throughout the length of the bone, and there were several palpable and pulsating vessels around the inner aspect of the right knee-joint. The limb surface in the upper thigh area was shiny, with some distension of the superficial veins extending to just above the iliac crest. No demonstrable oedema of the limb was observed. The internal saphenous vein was palpable and visible along its course from the internal malleolus to the inner side of the thigh; the skin was grooved over it, and it was patent throughout. There was no collection of enlarged superficial vessels in the skin.



Pulsation in the dorsalis pedis artery was equal to the touch in both feet, and the systolic pressure in both legs was 130 mm. Hg. The blood pressure in each arm was 110/80 mm. Hg. Occlusion of the right common femoral artery slowed the pulse after an interval of about 6 beats by 10 to 15 beats a minute, with quickening soon after release. Occlusion of the left artery was without effect on the pulse rate. No other vascular abnormalities were noted, and the heart was normal in size. A radiograph of the right tibia showed no grooving suggestive of erosion by enlarged vessels.

Surface temperatures were not taken, but daily groin temperatures were on the average 0.4° to 0.8° higher in the right groin than in the left. Repeated observations in which the skin was felt showed the temperature to be consistently higher on the right side throughout the whole leg.

Discussion

The unusual and puzzling feature of this case was the milky discharge, and no reference to a similar happening has been found in the literature. Unfortunately this cleared up so quickly that we were unable to make full observations on it, but its presence pointed to an increased flow of lymph in the limb. The close embryonic relation between lymphatic vessels and veins, which are both derived

from a common capillary plexus, may have produced a lymphatic developmental disturbance with increase in the lymph channels, or the greater lymph flow may simply have been the result of an increased blood supply to the limb. No oedema of the limb was present when the patient was first seen, and we do not know whether there had been any before the discharge.

The most striking clinical feature of these cases is the increased growth of the limb, affecting bones and soft parts. Paterson and Wyllie (1925) suggest this is due to an increased vascularity at the growing ends of the tibia and femur. Experimental section of the sympathetic nerves of limbs of kittens as described by Harris and Wright (1930), although producing a greater blood supply, did not increase their growth. When the cervical sympathetic nerve and ganglia were removed in a rabbit's ear some increase in growth was noted after 100 days, and those authors suggest that it may be the higher temperature of the limb that acts as a stimulus.

The exact cause of the hypertrophy is still far from clear, and the presence of the lymphatic discharge in the above case must remain unexplained until a recurrence of the discharge allows later investigation, or further cases have been observed.

My grateful thanks are due to Sir Thomas Lewis for the interest he has taken in the case and the help he has given in writing these notes.

REFERENCES

Harris, K. E., and Wright, G. P. (1930). *Heart*, **15**, 141.
Holman, E. (1937). *Arteriovenous Aneurysm*, London.
Lewis, D. de W. (1930). *Lancet*, **2**, 621, 680.
Lewis, T., and Drury, A. N. (1923). *Heart*, **10**, 301.
Paterson, D., and Wyllie, W. G. (1925). *Brit. J. Child. Dis.*, **22**, 36.
Reid, M. R. (1925). *Arch. Surg.*, **10**, 601 ; **11**, 25, 237.

Medical Memoranda

Isotonic Glucose Solution in the Treatment of Fibrositis

J. H. Kellgren (1938), in an account of referred pain arising from muscle, recommended the infiltration of a 1% solution of novocain into the tender spots. The success attending this method of treatment is no doubt the reason for its adoption by an increasing number of observers. Various proprietary preparations of cocaine, under different names, have since made their appearance, and all seem equally efficacious. They all, however, labour under a common disadvantage in their liability to produce general as well as local effects, to say nothing of the risk of the formation of a habit, which might easily occur. Complaints of a "muzzy" sensation after injection are by no means uncommon, while in susceptible individuals the systemic disturbances thus evoked may be decidedly unpleasant.

Kellgren mentioned that in instances in which novocain infiltration abolished the symptoms this effect often outlasted the actual anaesthesia and was more or less permanent. This can readily be confirmed by anyone who has used this treatment, and the question naturally arises whether an injection solution possessing local anaesthetic properties is really necessary.

An isotonic solution of glucose seems to have very much the same effect, and I have been using it for some time with equally good results. A 5-c.cm. syringe fitted with a very fine needle is employed. The parts are carefully palpated in order to find the exact spot from which the pain radiates. The patient will usually flinch when the finger presses the tender area, and inquiry should be made whether the pain "shoots" along the limb or part in any given direction. It must be emphasized that the mere presence of pain in a limb or elsewhere is not in itself a sufficient indication for the injection unless it can be clearly shown that the source of the pain is a palpable tender spot. Diffuse pain in a limb without localized tenderness should be treated in other ways.

When the tender spot has been found it is well to mark it with a skin pencil and then continue the search for similar areas. These will no doubt be found and marked in like manner. With the syringe charged with 5 c.cm. of isotonic solution of glucose the fine needle is introduced for about an inch into the marked spot and 1.5 to 2 c.cm. is slowly injected. If the patient experiences some pain radiating from the site of injection it is pretty certain that the correct spot has been chosen. The remainder of the fluid in the syringe can then be distributed among the other spots that have been marked. Usually three injections are enough.

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REFERENCE

Kellgren, J. H. (1938). *British Medical Journal*, **1**, 325.

Nova et Vetera

DR. GEORGE BIRKBECK, 1776-1841

December 1 marked the centenary of the death of Dr. George Birkbeck, the eminent philanthropist and physician. He was born at Settle in Yorkshire on January 10, 1776, the son of a well-known merchant and banker. He studied medicine first at Leeds, and then in London, where he became a pupil of the celebrated Matthew Baillie, and lastly in Edinburgh, where he qualified in 1799 with a thesis on the blood. Shortly afterwards he succeeded Dr. Garnet as professor of natural philosophy at Glasgow, where he instituted a free course of lectures on philosophy for the labouring classes. This work met with remarkable success and formed the basis of a system of mechanics' institutes to which he devoted most of his life. He left Glasgow in 1804, and after lecturing in Birmingham, Liverpool, and Hull, settled in London, where he soon acquired a large practice. In 1822 he helped to found the London Mechanics' Institute in Chancery Lane, to which he lent £3,000 for the erection of a lecture theatre. He was made director of the institute, to which his name was given, and held this office until his death. A brief memoir of him by Dr. Henry Clutterbuck was published in the following year.

THE FOLK-LORE OF ALCOHOLISM

In a recent paper (*Brit. J. Inebriety*, 1941, **39**, 30) on this subject Dr. J. D. Rolleston remarks that with the exception of Hovorka and Kronfeld, who devote some pages to it in their work on comparative folk-medicine, no writers, to his knowledge, have dealt at length with folk-lore in relation to alcoholism. He has therefore collected the folk-lore of this condition, as he has recently done in the case of pulmonary tuberculosis and other diseases (see *Journal*, 1941, **2**, 417). His paper deals with the nomenclature, popular phraseology, superstitions, and leechcraft connected with alcoholism, the term "leechcraft" being that commonly employed in the language of folk-lore to indicate popular methods of prevention and cure. In his paper on "Alcoholism in Classical Antiquity" read before the Society for the Study of Inebriety in 1926 (see *Journal*, 1926, **2**, 702) he had drawn attention to the numerous synonyms for bibulous and inebriated persons both in Greek and Latin as well as in English, which, according to Roget's *Thesaurus*, contains about seventy such terms, only a minority of which could be regarded as slang. In a recent perusal of Farmer and Henley's work on *Slang and its Analogues* he had found over 600 terms for the substantive and verb "drink" and various forms of alcoholic intoxication. The number of slang synonyms connected with alcoholism was only exceeded by those of even greater popular interest—namely, "money" and words connected with the anatomy and physiology of the generative organs in both sexes. Popular interest in the consumption of alcohol, especially in excess, was further demonstrated by the great variety of similes and proverbs connected with excessive drinking. The number of superstitions and popular errors associated with alcoholism was legion.

Dr. Rolleston classified the folk-lore remedies for the prevention and cure of alcoholism as follows: (1) animal remedies, many of which were to be found in Pliny ; (2) plant remedies, of which the chief were cabbage (highly esteemed by Cato the elder), almonds, and betony ; (3) mineral remedies, including the agate, amethyst, and pumice stone ; and (4) water. Unlike pulmonary tuberculosis, for which there were many patron saints, alcoholism had few religious associations apart from Dionysus or Bacchus in classical antiquity.

Reviews

CANCER IN COTTON WORKERS

Mule Spinner's Cancer: Epithelioma of the Skin in Cotton Spinners. By E. M. Brockbank, M.B.E., M.D., F.R.C.P. (Pp. 36. 4s.) London: H. K. Lewis and Co., Ltd. 1941.

Epithelioma, or cancer of the skin, occurs in a number of industries, especially those in which tar or mineral oils are handled. To-day it is probably the commonest notifiable industrial disease, with the highest mortality rate. In 1938 165 cases were notified to the Factory Department, of which 21 were fatal; of these cases 58 occurred among cotton mule spinners, with 12 deaths. In 1940, 41 mule spinners were known to have contracted the disease, and 20 deaths were reported. These facts speak for themselves, and the short illustrated monograph issued recently from the pen of Dr. E. M. Brockbank is therefore all the more welcome, and is a valuable contribution to the literature on the subject. The author's experience of this occupational disease extends over many years in his capacity both as a medical referee for industrial diseases and as chairman of the Manchester cancer research subcommittee since its foundation in 1925. With such unusual opportunities for studying the problem of mule spinner's cancer it is no wonder that this book is a mine of information, most of it of a severely practical nature. Its contents should be fully known to all those whose work brings them in any way into contact with the cotton industry, masters and men as well as the medical profession. As the author claims, if systematic preventive measures are generally adopted the incidence of the disease should diminish greatly and eventually it should disappear completely.

Dr. Brockbank discusses the history of the disease with special reference to its incidence in the cotton mills of Lancashire. It is a matter of considerable significance that the University of Manchester established a special research unit to deal with the problem, and the work of Twort and others in this connexion is well known. Perhaps the most interesting parts of the book are where the author discusses the causation of scrotal cancer, the scrotum being that part of the body most frequently affected, and outlines certain preventive measures. It is obvious that the author has an intimate knowledge of the industry and has based his observations on close investigation of the various processes within the actual factory. His description of the mule spinning machine, for example, is a model of clarity. Among the preventive measures advocated are regular periodic medical examination of operatives; talks with the men on personal hygiene; propaganda by means of lantern lectures and handbills; and careful selection of oils so that only those with the lowest carcinogenic properties are used in the industry. There is never a better case for setting up factory medical services than where a specific health hazard exists. In our view more could have been made of this point by the author, because if individual firms in the cotton industry are not large enough to appoint their own medical officers in a whole-time capacity, or are anxious to have them in a part-time capacity, there appear to be good economic and humanitarian grounds for the industry itself to make special appointments of one or more whole-time doctors.

In these days when industrial health is of such vital importance to the national effort it is refreshing to know that senior members of the profession outside the ranks of industrial medical officers are taking an active interest in the problem. More of this practical interest is urgently wanted from both medical and surgical specialists as well as from members of the research and teaching units attached to our main hospitals. The example of Manchester University, which incidentally is one of the very few in this country having on its staff a lecturer in industrial hygiene, is one to be followed by others: an example not only of the practical application of medical research to factory needs but of a policy carried out with the close collaboration of the actual industry concerned.

REVIEW OF BIOCHEMISTRY

Annual Review of Biochemistry. Edited by James Murray Luck. Associate Editor, James H. C. Smith. Volumes IX and X. (Pp. 744 and 692. 27s. 6d. each volume.) California: Stanford University P.O., Annual Reviews, Inc.; London: H. K. Lewis and Co., Ltd.

In these two volumes we observe the influence of wartime conditions in tending to remove the international character from a scientific publication hitherto noted for that quality. There is, however, no fundamental departure from customary form and standard, nor is there any blurring of the clear picture which the publication has yearly presented of biochemical progress.

To readers of this *Journal* the 1940 volume affords a greater proportion of interesting material than most of its predecessors; three contributions have very direct bearing on clinical work—one, in fact, being entirely devoted to the clinical applications of biochemistry. This contains a useful and timely survey of tests introduced into service in recent years, but which have called for extensive study in order that their significance might be properly defined. While the chapter on the application of microchemistry to biochemical analysis will concern only the laboratory worker, that by Prof. Dodds and Dr. Dickens on the biochemistry of malignant tissue has a distinctly wider appeal, for it is out of such authoritative evaluations of the literature that most of us must gauge the extent to which scientific research is penetrating the cancer problem.

The striking claim that the proteins of cancer tissue are characterized by the presence of amino-acids of "unnatural" configuration receives critical treatment in the article just mentioned, and it is further examined in more than one connexion in the current volume. The evidence now accumulated seems to dispose of the validity of the original contention. In the past the *Review of Biochemistry* has provided some remarkably able contributions in the hormone field, but none have surpassed that of E. C. Kendall in the latest volume for its combination of clarity and conciseness. The hormones of the adrenal cortex receive rather special attention, in aspects ranging from their chemistry and physiological effects to their clinical applications.

The value of the current volume could not be fully emphasized without reference to the chapter on nutrition—a topic which now challenges the interest of the whole community. Here is summarized in very readable form the results of various big-scale investigations carried out in the U.S.A., designed to give an accurate appraisal of the nutritional status of different sections of the population. The lessons to be derived from such studies are clearly of immense importance to all engaged in tackling the food problems of our own country.

IMPERFECT MAN AND HIS FUTURE

Medicine and Mankind. By Arnold Sorsby. (Pp. 236; illustrated. 12s. 6d. net.) London: Faber and Faber, Ltd. 1941.

Man: The Mechanical Misfit. By G. H. Estabrooks. (Pp. 251. 10s. 6d. net.) London and New York: The Macmillan Company. 1941.

At this crisis in world affairs it is not surprising that the application of biology to sociology, using both terms in their widest sense, should make a wide appeal. The two

books before us are concerned with the influence of the manifest imperfections in man's physical and mental equipment on the future of civilization; but here their resemblance ends. It is curious that two authors starting from the same premises should reach such contrary conclusions. Mr. Arnold Sorsby's *Medicine and Mankind* is a sober review of the nature of disease under the headings of "The Ill-formed Body," "The Ill-balanced Body," "The Abused Body," and "The Assaulted Body"—titles which indicate his method of approach. Then follow chapters on treatment by individual and collective measures, leading up to a consideration of social achievements and frustrations. The teaching of Galen stressed the perfection of the body; later authorities laid emphasis on its corruptibility; both these views postulated an unchanging body in a changeless environment. To-day we visualize the body as in an unstable physico-chemical equilibrium, constantly responding to the shifting equilibria of the outer world. Medicine must take into account both the internal structure of man and his external environment. The author recalls the views of Heraclitus 2,500 years ago that everything is in a state of "becoming"; we might add that Bergson's modern revival of that philosophy in a forcible form has been forgotten all too soon. The whole argument is couched in such language as to appeal to the ordinary educated reader; technical jargon has been skilfully avoided, while the illustrations and graphs are a decided help. Apart from his fears as to a decline in the population of the civilized world, Mr. Sorsby's conclusions are on the whole hopeful, as indeed the achievements of man justify, despite recurrent setbacks due to the caveman who is still always with us. The bearing of mental activities on health and disease and their derangements are deliberately excluded from this survey because the author felt it impossible to do justice to such a complex subject within the compass of his book. Nevertheless he has produced a thought-stimulating piece of work, with a forwardly directed gaze which faces the problems of the future courageously.

Dr. G. H. Estabrooks is an anthropologist and not a medical man. The jaunty and jocular style of his *Man: The Mechanical Misfit* accords ill with his pessimistic conclusions. He is convinced that man began to deteriorate from the time he adopted the upright position. He appears to look to unopposed action of natural selection as the only remedy for the parlous state into which mankind is falling. This book is a positive mine of inaccurate information.

SCHIZOPHRENIA IN CHILDHOOD

Schizophrenia in Childhood. By Charles Bradley, M.D. (Pp. 152. 10s. 6d. net.) New York and London: The Macmillan Company. 1941.

The Emma Pendleton Bradley Home admits "difficult" children with mental and physical disabilities, and Dr. Bradley, as medical director, has had a full opportunity of studying children's psychological reactions over a long period. The subject he has chosen for his monograph is a difficult one, for schizophrenia as a whole is still a battleground of theories out of which, unfortunately, all too little practical achievement has emerged.

Schizophrenia is a fairly common disease of youth but not of childhood; indeed, some authorities declare that the onset of puberty is necessary for its development. This, however, is apparently not true, for in the literature, which is amply reviewed in this book and correlated with the author's own experience, cases are described which are now sufficiently numerous to establish what the author in his last chapter calls a "practical concept of childhood schizophrenia." This chapter, in fact, admirably sums up the whole of the systematic discussion of the subject which makes up the rest of the book. Schizophrenia to fit in with this concept must occur in childhood—that is, before the age of 13—and must be severe enough to constitute a psychosis, for many "schizoid" traits may be observed in children who are certainly not psychotic. The appearances of the disease will differ from those in the adult by reason of the child's restricted mental development and of the fact that his mind is developing all through the progress of the disease. The author suggests as a short definition "a rare but severe distortion of the personality, peculiarly distinguished by a diffuse retraction of interest from the environment."

Many factors may be cited as having causative significance, but none of them is found to be universal or even statistically valid, and we must admit that we do not know the cause. Primary symptoms are extreme seclusiveness, excessive day-dreaming, regression of personal interests, bizarre inappropriate behaviour. Autistic thinking and dissociation, emotional blunting, and intellectual deterioration are less marked than are these symptoms in adults. Outbursts of temper, negativism, and psychomotor activity are secondary to thwarting of primary symptoms. Clear-cut examples of the four adult types are not seen in childhood, and it is probably better to describe acute and chronic types. Laboratory tests, whether pathological, neurological, or psychological, are not helpful, and diagnosis depends on the combination of symptoms. Treatment, whether by psychotherapy, shock therapy, or other means, is uniformly disappointing, and the prognosis is bad.

This is a well-documented review of a difficult subject, with a good bibliography, and it may be confidently recommended to the attention of all psychiatrists and paediatricians.

Notes on Books

Plant Science Formulae, by R. C. MCLEAN and W. R. IVIMY COOK, is described as "A Reference Book for Plant Science Laboratories (including Bacteriology)," but the bacteriologist will find only a few very simple stains and culture media described which fall within his province. Mycology and botany are much more fully served, as is to be expected both from the main title and from the fact that both authors are botanists. The book consists entirely of formulae and practical instructions, and those concerned with fixing, embedding, museum work, and photography have wide applications and will be generally useful, as are such things as the log tables, a chapter of physical and chemical formulae and equations, and a list of scientific suppliers. Most original and useful of all is a chapter entitled "Workshop Receipts," which gives instructions for painting black-boards, cleaning mercury, silvering glass, making putty, size, and polarity paper, and many other useful things not often found in books. The publishers are Macmillan and Co., and the price is 7s. 6d.

Dental Materia Medica, Pharmacology and Therapeutics, by Prof. W. J. DILLING and Mr. SAMUEL HALLAM, has now appeared in a new edition (Cassell and Co., 13s. 6d.). The drawback of this book is that it attempts to cover almost the whole field of materia medica, and gives insufficient attention to the information which the dentist really requires. There is no mention of the sterilization of syringes, and no discussion of the difficulties of sterilizing solutions of procaine, except to say that solutions of procaine can be boiled, which many consider unsafe. Nor is there any mention of the danger of boiling adrenaline when diluted unless precautions are taken to keep the reaction acid. There is no mention of the increasing appreciation of the value of percaine, or indication that it stands out in usefulness above other local anaesthetics. These and other similar points are of great importance for the dentist.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY DECEMBER 13 1941

CERTIFICATION AND NOTIFICATION

The winter session of the General Medical Council which has just been held draws attention once more to the thorny question of certificates, especially to those which are signed carelessly or in a misleading manner. Of late, our correspondence columns have borne witness to the growing irritation among doctors at the multiplicity of forms they are called upon to sign. And last week a correspondent in our contemporary recorded that he had had to sign a certificate so that a child with congenital dislocation of the hip could be supplied with a rocking-horse. Those who have to carry this additional and vexatious burden deserve our sympathy. But however the demands for certificates may grow they must be signed with good faith, care, and exactitude. In the *Journal* of April 19 of this year we printed a warning notice issued by the General Medical Council on the signing of certificates. As the notice stated: "Unverified assertions made by the patient himself, personal opinions as to his fitness or unfitness for various forms of service, or for particular hours of work, and other statements not founded on a careful examination of the patient immediately before a certificate is given, or supported by ascertained facts or conditions, are not proper material to support a certificate signed by a registered medical practitioner as his testimony to facts within his professional knowledge." The notice went on to emphasize that a certificate should be granted *only on medical grounds*, and from the practitioner's personal knowledge of the health and physical condition of the applicant at the time of granting the certificate.

These are clear and, indeed, obvious desiderata. Nevertheless we have good reason to believe the military authorities have been disturbed by numerous instances of apparent laxity in the granting of certificates to soldiers. At Liverpool Assizes last month a practitioner was sentenced to four years' penal servitude for issuing a number of deliberately untrue certificates to members of H.M. Forces. Such an offence, apart from gravely infringing the professional code, is a serious obstruction of the war effort and rightly called for the stern comment of the judge in passing sentence. Last week in the House of Commons the Minister of Labour and National Service, in reply to a question, said that he was prepared to take ruthless action against anyone falsely certifying men unfit for military service. But it is less in the deliberate untruth than in the careless and inaccurate statement that harm is being done. All practitioners would do well to search their own hearts on this score. For example, serious interference with war production may be caused by certifying men unfit for night work on apparently very slender medical grounds. A list could easily be made of minor evasions from various forms of national service and wartime restrictions. There is the fire-watcher who seeks exemption for a trivial disability; the housewife who wangles extra milk for an alleged illness; the soldier who wants an extra day's leave. In many such cases the granting of a certificate may be perfectly justified, but in far too large a minority it is not. The certifying doctor must be sure of his grounds and remember that an unjustified certificate not only causes a weakening of the war effort but exposes him to the jurisdiction of the General Medical Council.

Three penal cases concerning irregular certification were considered at its recent session, and some of the points arising therefrom are worthy of comment. One defence suggested that the document in question was not a certificate in that the words "This is to certify" or some such phrase did not appear on it. In its warning notice to the profession the G.M.C. speaks of "any such certificate, notification, report, or document of a kindred character which is untrue, misleading, or improper." Clearly, then, any written statement about a patient's health which is backed with the authority of the signature of a medical man as such falls into the same category, however it may be worded and whatever title it may bear. Another line of defence was that the document did not contain any statement that the patient had been examined. Whereas the official certificates used in relation to national health insurance must state categorically that patients have been examined on a particular day, other forms of certificate, less precisely drafted, are in common use, and in these the question of whether such certificates are misleading may, and often does, arise. The party for whose information the certificate is issued is entitled to assume that the facts cited therein are within the doctor's own knowledge. It should never be the practice for a doctor to give a certificate for the substance of which he relies on the statement of someone else, especially when members of the Forces are seeking extension of leave or exemption from service on medical grounds. "What the soldier said" or "what the butler saw" is not evidence. Failure to keep proper records or books of accounts is not professional misconduct, but its inconvenience to practitioners who may need evidence from such records or accounts for their assistance in legal or other proceedings was illustrated by another case before the Council in which the charge was not found proved. It is a matter of elementary prudence to keep what is generally known as the "day book," in which the name and address of the patient and such details as prescriptions given are recorded under the exact date of the visit. Such a serial record of work done provides evidence that cannot be disputed.

In addition to signing certificates the practitioner has a statutory duty, under various Acts of Parliament, to notify certain events. A practitioner charged with failure to notify the medical officer of health of his district, as required by the Puerperal Pyrexia Regulations, 1939, in a case attended by him in a maternity ward on May 26 and subsequent days, stated in evidence that he never notified cases of puerperal pyrexia occurring in his hospital practice, although he always did so in his private

practice. His patient had obstructed labour, and he performed Caesarean section seven hours after admission to hospital. She suffered from thyrotoxicosis and dilatation of the heart, and later developed acute pneumonia and died on the seventh day after delivery. Although over most of the period the temperature was raised considerably, the practitioner did not consider that his patient suffered from a septic condition arising from the confinement. He had not, however, made any bacteriological examination of the lochia or of the blood. Facilities for making these examinations were available in his district. The G.M.C. found that the facts alleged against him in failing to notify had been proved to its satisfaction. The Minister of Health, in Circular 722, issued in 1926, when notification of puerperal pyrexia was first introduced, and again in Circular 1765, issued in March, 1939, sought "to impress upon all those concerned with the administration and clinical conduct of maternity institutions that the presence of a febrile condition, however slight in degree, in a patient or member of the staff should be considered as liable to give rise to an outbreak of virulent infection." Circular 1765 also stated that "if notification of puerperal pyrexia is to have practical value it should be early and complete. It should be followed by investigation into individual cases and by intensive study of the causation and course of outbreaks of infection, whether in domiciliary or in institutional practice." These regulations under the Public Health Act, 1936, are made solely in the public interest. Regulation 2 defines puerperal pyrexia as "any febrile condition occurring in a woman within twenty-one days after childbirth or miscarriage in which a temperature of 100.4° F. or more has been sustained during a period of twenty-four hours or has recurred during that period." Whatever may be the medical attendant's belief as to the causation of this rise of temperature in any specific case, it is his plain duty to notify every case and to take the steps necessary to establish a definite diagnosis by modern bacteriological methods, so that the newer forms of treatment are not denied to his patient and that the community may be protected against the further spread of streptococcal infections when these have been found to exist.

It is much to be hoped that practitioners—in their own interest as well as in that of the public—will make themselves fully acquainted with their legal obligations and take heed of the obvious lessons that can be learnt from the cases recently before the G.M.C. and recorded in the *Supplement* to this *Journal*.

PRUNING THE PRESCRIPTION

In the more spacious pre-war days cases of excessive prescribing were not infrequently brought before Panel Committees, but the fault was generally regarded as venial, and only in the worse examples was any severe penalty imposed. The importance which patients, insured or not, attached to drugs or other medicaments as an outward and visible sign of medical treatment was always remembered. Unusual demands for drugs, even the use of more expensive preparations when cheaper ones would suffice, were regarded as an unwarranted trespass upon national health insurance funds, but not as a misdemeanour from the point of view of national economy. With the nation at war, however, the situation is entirely altered, and what was an excusable indulgence becomes a grave dereliction of duty. Our attention has again been drawn to the great need for economy, especially in the phenol derivatives and, linked closely with those, in alcohol, glycerin, glucose, mercury salts, and liquid paraffin.

It has been an unhappy experience during this war to find, with regard not only to drugs but to foods and other commodities, that when the public is urged to practise restraint in buying some particular article many people immediately make a run upon it, with the consequence that sometimes it disappears from the market altogether. It is only necessary to say that there is a shortage of some commodity, and forthwith individuals, foreseeing rationing and control, lay in exceptional stocks. That has been the experience with drugs, so that instead of a hoped-for slackening in requirements there has been an increased demand, and the slender margin of supply has been obliterated. When the Therapeutic Requirements Committee of the Medical Research Council mentioned that economy in liquid paraffin was desired the effect was actually to increase the call for that substance.

One economy now specially urged is in the use of aspirin and the salicylates generally. There is believed to be a considerable amount of aspirin addiction in this country. We hesitate to give the quite astonishing figures quoted to us by a well-informed official concerning the amount of aspirin regularly taken by young women in Government offices. It seems to be as usual to swallow an aspirin tablet as it is to use a cosmetic. Purchases of aspirin and kindred remedies over the counter without a prescription may have to be regulated, but meanwhile medical practitioners can help to set an example by exercising some restraint in ordering such drugs, putting down only 5 grains, for instance, if 5 grains will serve, instead of the accustomed 10. The difference in the individual case is negligible, but it must always be multiplied by the thousand or hundred thousand of similar cases and thought of in terms of shipping space or the use of a particular substance for war needs. Practitioners might also consider whether they are ordering larger quantities of mixtures at a time than they need. In Scotland the standard mixtures are made up in 6-oz. bottles, but in England in 8 oz. It has been possible here and there to cut down the size of containers, also to limit the variety of sizes offered. One manufacturer formerly used to put up aspirin in twenty-five different sizes of packing; he now puts it up in four, with no particular disadvantage to the purchaser. Unfortunately one cannot, by the wave of a glass rod, alter the size of the medicine bottle. It is true that the bottle need not be filled up to the cork, but, there again, there is supposed to be some obscure value in the full bottle brought back from the drug store or dispensary. The public would probably not object to a smaller bottle, but a bottle which was only three parts full would have a sadly depreciated merit in their eyes.

All that can be done in this matter is to appeal to the public spirit of the medical profession. If any

doctor still insists on exceeding his real requirements and rejecting proffered substitutes—and there is no shortage of articles for which there is no substitute—he must be left, for the present, to his conscience. Such action makes inevitable a control imposed from without, which will have to be endured not only by those who have put their own interests to the front but by those who have loyally responded to the appeals made to them. But if the profession does incline sympathetically to official guidance in this matter there will be enough drugs to go round. On the other hand, if any considerable number of practitioners rush in to stake out excessive claims difficulties will at once arise and some sort of control may become necessary—an expedient which, in spite of the supposed love of Whitehall for bureaucracy, the Ministry of Health is anxious to avoid. There is believed also to be a good deal of wastage of drugs in hospitals and other institutions, and the Ministry has done well to circularize not only the medical but the nursing staffs of E.M.S. hospitals, and, we believe, of the municipal hospitals as well.

The War Memorandum prepared some time ago by the Therapeutic Requirements Committee and issued by the Medical Research Council on "Economy in the Use of Drugs in Wartime," followed as it has been recently by the *National War Formulary*,[1] as well as by the latest Addendum to the *British Pharmacopoeia*,[2] which was compiled with the war situation in view, gives indications as to the "limited" drugs, the replacements available, and the economies which may be practised. With these the practitioner should have little difficulty in reconciling his duty as a citizen with his duty to his patient.

DERMATITIS FROM NAIL LACQUER

Little has been heard in this country of dermatitis due to cosmetic preparations for the nails. Cuticle removers, which often have for their active ingredient liquor potassae suitably diluted, are sometimes known to give rise to onychia, but the manufacturers are well aware of this risk and often make their product so weak as to be rather ineffective. But in America during the last few years a good many cases have been recorded of dermatitis due to the employment of nail lacquer, whether dyed or colourless. One of the first cases was reported by Sulzberger in 1937; in this the diagnosis was confirmed by positive patch tests. Palmer[3] now reports nine cases in about a year. In each instance the dermatitis began on the face and only subsequently and much later spread to the peri-ungual skin. It appears to be caused by contact between the lacquered nails and the cheeks, chin, or eyelids. Recovery ensued when nail lacquer was discontinued, but resumption caused a relapse. Palmer made considerable efforts to discover the toxic agent in the lacquer and tried to secure the co-operation of one of the manufacturers, but without success. He was merely assured by the firm applied to that its product was above suspicion. Nail lacquers appear to be composed of four constituents: (1) a body, usually consisting of nitrocellulose with a resin; (2) a plasticizer, an oily body with a high boiling-point; (3) a solvent, which may be a ketone, an alcohol, or an ester; and (4) a dye—but some nail lacquers are colourless. There is no evidence that the highly coloured lacquers which many women prefer are any more likely to give rise to symptoms than the colourless varieties. Although Palmer tested no fewer than twenty-nine different compounds with a view to discovering the toxic ingredient, his results were inconclusive. It can only be said that a few substances known occasionally to give rise to dermatitis in other circumstances may sometimes do the same when included in a nail lacquer. Such are formaldehyde, cresol, and turpentine. The use of nail lacquer appears to begin at an earlier age in America than it does here. Palmer states that girls of 5 years and upwards are found to use it, but as yet he has found no cases of lacquer dermatitis in children, or in women who lacquer their toe-nails, or in men who employ colourless lacquer for their finger-nails.

[1] *British Medical Journal*, November 8, 1941, pp. 656, 662.
[2] Ibid., September 27, 1941, p. 453.
[3] *Arch. Derm. Syph.*, Chicago, 1941, **44**, 13.

DEATH FROM MERCURIAL DIURETICS

The mercurial diuretics represent the most noteworthy advance in the treatment of dropsy since Withering rationalized the employment of digitalis. It is probable that they are still not widely enough used, more particularly in cases of left heart failure in which oedema and congestion are localized to the pulmonary circulation, and in which the presenting symptom is dyspnoea or cardiac asthma. With remedies so powerful as this it is not surprising that, as with digitalis itself, untoward symptoms occasionally occur. The older physicians were well aware of the accidents of diuresis and were wont to advise that the heart should be supported by digitalization before diuresis was encouraged. There is, however, nothing to suggest that mercurial diuretics increase the work of the circulatory system, apart from the mechanical effort of urination. The kidney, like the large bowel, acts as a condenser in which most of the large volume of fluid filtered out of the circulation is restored to it, and the mercurial diuretics act essentially by diminishing the efficiency of the recovery process. It is, in fact, the duty of the kidney to aid in conserving the internal *milieu* of the organism, and one of the dangers of diuretics lies in interference with this process. It is no light matter for the body, even the oedematous body, to adapt itself to a total loss of five litres or more of fluid a day—the resulting disturbance, both in the balance of electrolytes and in the partition of water between cells and body fluids, may express itself in symptoms of physical malaise and mental disturbance. These ill effects can to some extent, though perhaps not entirely, be avoided by regular examination of the blood plasma, more particularly for chloride, bicarbonate, and urea content; and biochemical tests of this kind are absolutely essential if mercurial diuretics are supplemented by a salt-poor diet or by acidifying agents. These biochemical disturbances give warning of their development, and in the hands of the careful physician they should never end fatally. Unfortunately they do not exhaust the dangerous potentialities of this form of treatment.

In a discussion at the annual meeting of the Association of Physicians of Great Britain and Ireland this year several speakers mentioned the occurrence of sudden death after treatment with mercurial diuretics, and a fully documented account of such accidents has now been published from American experience by Mary Tyson.[1] She has collected the histories of five cases of fatal or almost fatal reactions to intravenous injections of mercurial diuretics; all of these were associated with nephrosis. The shock dose was never more than 1 c.cm., and in some cases only 0.5 c.cm. In every instance the intravenous injection was made slowly,

[1] *J. Amer. med. Ass.*, 1941, **117**, 998.

The reaction was almost immediate and was characterized by convulsions, dyspnoea, cyanosis, coma, and death. In the cases recorded this reaction never came after the first dose, but after the second, third, and fifth. Tyson therefore believes that the reaction is anaphylactic and connected in some way with the alteration of the blood proteins in nephrosis. She believes that the use of mercurial diuretics is contraindicated in nephrosis. Here, in our opinion, she goes too far. Massive oedema is a severe handicap to a patient and a strong predisposition to infection and premature death. If there was a successful operative treatment for nephrosis we should not forgo it because of the inevitable hazards of operation. For the same reason we cannot believe that there is justification for putting a general interdict on the use of mercurial diuretics in nephrosis. Two other conclusions seem more legitimate. The first is that no practitioner should ever treat a case of nephrosis with mercurial diuretics without warning the patient's relatives of the risks entailed. The second is that restoratives such as adrenaline and nikethamide should always be at hand before the injection is given. Finally, evidence should be obtained whether similar fatalities have followed injection of the drug by the intramuscular route.

CHEMOTHERAPY FOR TUBERCULOSIS

Neither the known properties of the tubercle bacillus nor the character at least of the chronic lesions produced by it encourage the belief that the ever-widening scope of chemotherapy will come to embrace this disease. A micro-organism so slow in its growth, so impermeable by noxious agents, and producing a destructive and comparatively avascular lesion, is the very antithesis of those fully susceptible to the sulphonamides. Nevertheless the search for a chemotherapeutic agent effective in tuberculosis continues in at least two directions. A well-worn path has been pursued with characteristic German thoroughness by Prigge,[1] who tested the action of twenty-three chaulmoogra derivatives on experimental tuberculosis in guinea-pigs. One of these compounds—4-*n*-hexylresorcin-dichaulmoogroyl-ester—prolonged the life of infected animals for an average of 14.2 days, a result which is considered encouraging enough to warrant further study on these lines. A very much more striking result from experiments of the same nature is reported by W. H. Feldman and his colleagues,[2] who have continued their studies of promin (the sodium salt of *p.p'*-diamino-diphenyl-sulphone-N.N'-dextrose sulphonate). It has been known since the early observations of Rich and Follis[3] with sulphanilamide that compounds of this nature have some retarding effect on the development of experimental tuberculosis in the guinea-pig, but the degree of effect now described for promin is of a different order. In these experiments the animals were given a dose of 0.005 mg. of human tubercle bacilli subcutaneously, and all controls had died of the disease in 189 days. In the treated animals administration of the drug was begun either at the time of inoculation or at intervals after it varying from three days to no less than six weeks. The extraordinary feature of the results is that from the information given they appear to differ little whether treatment was begun immediately or after this long delay. At the time of death of the last control 57 of a total of 68 treated animals were still alive. Of these, 41 showed no gross signs of tuberculosis at all, including a high proportion of those in which treatment was begun after a delay of two, four, or six weeks. In the remainder the lesions were confined to the site of inoculation, or included glandular or slight splenic involvement. These results were achieved by large doses of the drug, 300 mg. or more being consumed with food daily; this dosage caused blood changes, but no loss of weight or condition. It would be most unwise to conclude even from such results that the human disease will respond in the same way, but they are certainly more definite and encouraging than any which have gone before or than might have been expected on theoretical grounds from treatment with any such compound in this disease.

[1] *Klin. Wschr.*, 1941, **20**, 633, 657.
[2] *Proc. Mayo Clin.*, 1941, **16**, 187.
[3] *Johns Hopk. Hosp. Bull.*, 1938, **62**, 77.

NEW VIEW ON PINK DISEASE

So long as the aetiology of pink disease remains obscure treatment of it cannot be expected to be satisfactory. Any views on the subject are therefore welcome, and what T. A. Ratcliffe has to say[1] about a possible psychological origin must be viewed with respect, although possibly with reserve, since no alternative seems to have been generally accepted. He bases his experience on fifteen cases—six girls and nine boys—with an age of onset varying from 3½ months to 1 year and 5 months. They had all been full-time babies and all breast-fed at some time, ten of them up to the moment of admission to hospital. There did not seem to be any dietary deficiency, but, as other workers have recorded, in a high proportion some upper respiratory tract disease was associated with the onset. From the psychological aspect, Ratcliffe points out that excessive irritability is a striking symptom in most cases, and several types of mental upset are also found. In one of these the child lies in the "knee-elbow" position, crying if disturbed and showing photophobia, considered to be nothing more than a particular exhibition of irritability. In the second type there appears to be an increase of motor activity. The child is continuously crawling about its cot, or rocking itself to and fro for hours at a time. Such a child is stated to be reasonably co-operative and will "show off" to visitors. A third and rare type exhibits what is almost a catatonic state, lying for hours in strange positions in extreme lethargy. Another psychological factor to be borne in mind is the influence of the mother, and Ratcliffe states that all the mothers of the children with pink disease who were interviewed were of the "extrovert" type, with a continual cry of, "Will he be all right, doctor?" As, from experience gained in the psychological clinics for older children, this type of mother is well known to be associated with the behaviour problem child, it is argued that she may well be a factor in the production of changes in the child with pink disease. Ratcliffe asserts that the skin changes, the sensory changes, and muscular hypotonia might well be of mental origin, and that this is certainly true of the anorexia. Other changes, less easy to explain on a psychological basis, might be due to associated conditions apart from the pink disease. He argues against encephalitis as a cause of the nervous disturbances on the grounds of the complete absence of sequelae. But for a similar reason it is also difficult to accept a psychological origin, and Ratcliffe himself failed to find any history of pink disease in a small number of children seen at a child-guidance clinic. The value of this psychological theory as regards treatment would appear to lie in prevention. As a therapeutic measure Ratcliffe is an advocate of calcium lactate, administered in order to deal with the nervous irritability which is so marked in pink disease. He recommends a dose of 2½ to 5 grains three times a day, if necessary over a long period, claiming that there is an immediate improvement in appetite and sleep.

[1] *J. mental Sci.*, 1941, **87**, 545.

REHABILITATION SERVICES

The Minister of Health, Mr. Ernest Brown, in a speech at a luncheon given by the Corporation of Brighton during his tour of the borough's health services, spoke at some length on the Emergency Hospital Service, in particular on the arrangements for rehabilitation, defined by the Delevingne Committee in 1939 as "the restoration of the working capacity of people injured by accidents."

Mr. Brown reminded his audience that at the beginning of hostilities all countries made plans to meet large-scale air attack. The part the hospitals were assigned to play was to receive the thousands, even the hundreds of thousands, of casualties to be expected. But there was a lull until the last four months of 1940, during which four months the emergency casualty services dealt with over 80,000 patients in hospitals and first-aid posts. The lull extending over the first year of war, and the fact that even when it ended the total of casualties which the enemy had been able to inflict was less than that for which preparation had been made, enabled the Emergency Hospital Service to strengthen and extend itself. In addition to air-raid casualties and Service patients, it took in civilians who had left evacuation areas for reception or neutral areas, members of the civil defence organizations, and the Home Guard, transferred workers in industry, members of the Mercantile Marine, sick and away from home, and members of the Women's Land Army.

Types of Treatment Centres

The scheme could now be fairly described no longer as a casualty scheme, but as one that tried to meet all the new war needs as they arose. Specialist treatments were developed in selected centres, to which staff and equipment were brought, and patients were transferred to one or other centre as their medical needs required. Leaving aside other specialist treatments, the Minister concentrated on the rehabilitation scheme, in which the Emergency Hospital Service had endeavoured to translate into action the main principles laid down by the Delevingne Committee. The scheme had taken shape in four types of special treatment centres:

1. Orthopaedic Centres to the number of twenty-one. These gave the most highly developed service, covering all aspects of fracture treatment from the initial resetting of the injured part through all modern stages of physiotherapy and remedial exercises to complete occupational therapy.

2. Fracture Departments (A) to the number of fifty-six, with more in preparation. These differed from the centres only in that they did not contain all the very specialized provision for certain more difficult types of case. It was far better, said Mr. Brown, from the point of view both of the patients and of making the best use of medical experts, to concentrate them in this way.

3. Fracture Departments (B) to the number of 213, mainly hospitals with facilities which in peacetime might be suitable for the second category above, but were at present unsuitable for long-stay cases owing to their vulnerable situation, though useful for short-stay and walking cases.

4. Fracture Clinics (C) to the number of 136, to fill the gaps in areas which the hospitals did not conveniently cover. Both in these clinics and at the hospitals, after discharge from the latter, a patient may within convenient reach of his home be followed up and take part in rehabilitation activities.

Restoration to Working Capacity

This organization with its 426 establishments, and more in preparation, and with eminent surgeons to advise the headquarters staff at the Ministry and the staff in every region, was the embodiment of the first and second of the Delevingne Committee's principles and part of the third. The third principle was the fullest possible restoration to working capacity, and this was bound up with labour and employment questions.

Three strands had to be brought together: the preference of the ex-patient, depending a good deal on previous occupation; the nature and degree of disablement, on which the judgment of the patient's doctor was of first importance; and the demand or opportunity in particular trades and industries. The Minister of Labour (in his interim scheme published in October for the training and resettlement of disabled persons) had made arrangements whereby contact was made in hospital between the patient, the surgeon, and the Ministry of Labour officer. The last-named would have an interview with the patient before he left the hospital, and also with his doctor, records would be made on the basis of which the Ministry of Labour would offer advice, and when the patient had made up his mind what trade he was going into he could go to a training course. Thus the Emergency Hospital Scheme had been used to effect a transition from the pre-war situation in which the patient's treatment varied according to the initiative and resource of the local hospital to one in which the entire treatment and retraining was correlated.

Of this rehabilitation organization Mr. Brown said in conclusion: "In essentials it has come to stay. I cannot imagine that, whatever administrative arrangements may be made, we shall disperse all the medical and nursing skill that have been built up or discontinue the methods of concentrating it to the best advantage. Continuity of treatment under specialist surgeons, aggregation of special types of cases for long-stay treatment and rehabilitation will remain, and in my view so should the link with the employment machine which the Ministry of Labour has been busy forging."

These essentials of the scheme fitted in with the plans for hospital policy as a whole which the Ministry of Health recently outlined in the House of Commons.

Correspondence

The Sprue Syndrome

SIR,—I was much interested in the leader on the sprue syndrome in your issue of November 22 (p. 731), as I have just completed a paper on the same subject, which will appear in the next number of the *Guy's Hospital Reports*. My conclusions are as follows:

1. Tropical sprue, non-tropical sprue (or "idiopathic steatorrhoea"), and coeliac disease are varieties of the same disorder—the "sprue syndrome"—which differ only in the part of the world in which the disorder originated and in the age of the patient.

There are three characteristic and constant features of the sprue syndrome: (1) the stools contain excess of split fat, but no excess of neutral fat, meat fibres, or starch, and no inflammatory material; (2) radiography demonstrates the disappearance of the normal feathery or herring-bone aspect of the duodenum and jejunum produced by the valvulae conniventes; (3) no pathological changes are found in the intestines after death if post-mortem changes have been prevented.

With adequate treatment normal absorption of fat is restored together with the normal radiographic appearance of the small intestine.

2. It is suggested that the characteristic features of the sprue syndrome are the result of paralysis of the muscularis mucosae, which would lead to the loss of the pumping action of the villi, by means of which fat is conveyed from the lacteal radicles of the villi into the larger lacteals, and to flattening of the valvulae conniventes without changes in the normal appearance of the mucous membrane. Paralysis of the muscularis mucosae may be secondary to loss of the normal stimulant of Meissner's (submucosal) plexus or to the effect of vitamin deficiency or some toxaemia on the plexus.

3. An exception must be made for those cases of the sprue syndrome associated with disease of the mesenteric glands; in these the hindrance to fat absorption occurs at the level of the mesenteric glands instead of in the villi.—I am, etc.,

Oxford, Nov. 27. ARTHUR HURST.

Economy in Dressings

SIR,—The letter of my old friend Beckwith Whitehouse in your issue of November 29 (p. 787) has incited me to put pen to paper in spite of your scarcity of the latter.

Human nature being what it is, I should be gratified to know that I may have been the first to save the purchase by hospitals

of yards and yards of flannel bandage and gauze, and the nursing staff of hours and hours of measuring, cutting, and sewing, and to have decreased the discomfort of many, many patients. It is a trite saying that "there is nothing new under the sun." Probably, therefore, I cannot "lay this flattering unction to my soul," more especially since it was a hospital sister who put me wise. I was to perform a hysterectomy on this lady, who had previously undergone an abdominal operation. She begged me not to constrict her by an abdominal binder, as this was so hot and uncomfortable, especially the retaining pieces round the thighs. I agreed and went one better, stating that I would not cover the incision with any dressings.

Thus during some twenty years I dispensed with flannel binders and gauze dressings, except when a drainage tube was necessary, being satisfied with painting the incision with tincture of iodine and later with Bonney's violet-green. The patient was returned to the ward or in private to her room, clothed only in her nightgown, and her curiosity as to the position and length of the incision was satisfied after one investigation. I never remember any harm resulting. I was fortunate in my colleagues who administered the anaesthetic, since in the great majority of cases I did not have to anticipate post-anaesthetic vomiting. If by chance such occurred, or was likely to occur, an abdominal binder was put on *pro tem.*

I seem to remember the facetious remarks of my seniors, comparable to those when I first introduced indiarubber gloves and masks to my department, but the great loyalty of my immediate colleagues, so evident during a long tenure of office, was a sufficient stimulation.—I am, etc.,

London, S.W.1. Nov. 30. COMYNS BERKELEY.

Night-blindness: A Psychological Study

SIR,—In their paper on night-blindness in recent issues of the *Journal*, Wittkower, Rodger, Scott, and Semeonoff come to the conclusion that most cases of this disorder in this country "are probably of psychological origin." They submit both negative and positive evidence in support of this contention. The former consists in their inability to detect any ocular causes for the night-blindness of their 52 subjects, and in their assumption that the soldier's diet allows of no vitamin A deficiency. As positive evidence they submit their finding of "severe psychological disorders" in the great majority, and it is presumably on this that they expect their readers to accept their conclusion.

In their account of these alleged psychological disorders the authors provide an illuminating example of what—for them—constitutes evidence, and of how easily this may be collected. As they present it, their evidence consists in "what the soldier said" and their interpretations thereof, the two being inextricably mixed as though they were of equal evidential value. In any scientific discipline this confusing of facts of observation with the deductions drawn therefrom would be inadmissible. Yet even when the reader succeeds in separating "facts" from fancies, the nature of each as presented by the authors will astonish him.

As studied by the authors, the subjects of night-blindness are said to belong to two superficially distinct personality types: an over-dependent and an ostentatiously independent type. A residue is made up of men showing both characteristics in minor degree. The over-dependent consist of men who as boys were "mummy's darlings" (at least so apparently they were found willing to confess); of men who did not play games for fear of being hurt, who had such "girlish" habits as helping their mothers about the house, and who were shy, timid, and self-conscious. This type was represented by 27 men, who are divided into four subclasses: 6 who were totally unemployable, 7 who were shiftless workers constantly losing their jobs, 11 who did moderately well in life, and 4 who even excelled. It will be noted that in this analysis the original 27 have become 28, for even arithmetic seems to have lost its character as an exact science in the authors' hands.

In the interpretation of the competent 4 men we see the beginning of those procrustean proclivities that stamp this psychological study increasingly as it proceeds, for since they were not in fact "over-dependent" their efficiency has to be dubbed "anxiety-motivated." The ostentatiously independent type is represented by 12 men whose boyhood and later life is described as active, energetic, and masculine. As boys they were robust, stubborn and cheeky, inquisitive, leaders in games and sports, good mixers. The third mixed group had 13 representatives, who appeared almost normal.

If we take the engagingly candid confidence of these 52 subjects at their face value, an act of faith that not everyone will be able to perform, we seem to see in them the expression—exaggerated possibly—of every type of human personality. Not so for the authors, however, for, bent on tidying up reality in the paramount interests of psychological hypothesis, they tell us that all three types are but one: for the ostentatiously independent 12 are really "soft-hearted" dependent creatures who have over-compensated for the "inherent passive feminine trends" of which they "were vaguely aware" in themselves. The apparently normal 13 were also of this category and were simply covering up their morbid fears by trying to emulate their strong male relatives. There was no evidence of these morbid fears, but theory decides that they must have cherished them.

Thus by a free use of the notion of "over-compensation" a most satisfying—if not satisfactory—psychological harmony is introduced into this untidy human diversity. Whatever he may appear to the world the night-blind soldier is but a "mummy's darling" of a larger growth. That a few of these men had distinguished themselves in the field by gallant conduct is thus explained. They were brave simply because they were so excessively over-compensated. No man, it appears, is a hero to his psychologist.

When we come to study more closely the elements in this thesis the trail of rationalizing thinking is seen over it all. Thus, the small boy who—like most of his kind—falls off fences and trees and cuts himself in the course of his juvenile adventures is really only "helpless"; the domesticated small boy who does not scorn to help his mother is "girlish"; the small boy with a healthy inquiring mind is addicted to "prying interests and the wish to be taken notice of"; while the hollowness of the small boy who appears an unqualified success is revealed in his over-compensation. Thus, our night-blind soldier denied normality *a priori* becomes inevitably the victim of severe psychological disorders. It is difficult to believe that under an inquisition of this fantastic order even the keenest of night-sighted soldiers would escape intact, or with his ego untarnished, if it were deemed expedient to present him as psychoneurotic. The astonishing autobiographical reminiscences made by this collection of soldier patients leave one with the uncomfortable suspicion that some at least of them had their tongues in their cheeks, and that that incorrigible wag the British soldier was leading his naïve questioners up the garden.

On the negative side, the authors' failure to find adequate physiological causes cannot be accepted as excluding the possibility that such exist. The assumption that the soldier's diet renders a vitamin A deficiency an impossibility is a convenient one that saves the authors the trouble of ascertaining the facts. There is no such single thing as a soldier's diet, except possibly on paper.

As the matter is left by the authors, every soldier now complaining of night-blindness comes under the suspicion that he is a soft-hearted, dependent "mummy's darling." Whatever be the role of psychogenic factors in the incidence of defects of night vision, it would surely be wrong to accept the authors' thesis on no better evidence than they provide. One need not sentimentalize the soldier, who, after all, is but a sample of the population, but one cannot write him off in this cavalier fashion. The tasks of medicine are not fulfilled in this easy verbal manner, and it is to be hoped that the problem will be reinvestigated in a more balanced and scientific way by observers less swayed by psychological dogmas.—I am, etc.,

London, W., Dec. 4. F. M. R. WALSHE.

Testing Night Vision

SIR,—The second letter of Mr. E. W. Godding (November 29, p. 789), with his comments on the "disk-spotting test" of night vision, seems to make it plain that he has no personal experience of this particular test. He does not appear to have made any trial of its method. So that his remarks thereon are somewhat akin to the assertion in the last but one paragraph of his letter: "the 'standard candle' has not been used as the standard of

illumination since about 1900." If that statement be true, it is strange that there is still a first-class firm that makes and markets the standard sperm candle.—I am, etc.,

Edenbridge, Dec. 4. N. BISHOP HARMAN.

X Rays in Treatment of Inflammations

SIR,—In your issue of November 15 (p. 700) there appeared an annotation on the treatment of inflammatory conditions by radiotherapy, based on an article by Pendergrass and Hodes in the *American Journal of Roentgenology*.

It would be inappropriate for us to express an opinion on the merits of this method of treatment, but we do most strongly deprecate the suggestion contained in the annotation that it could safely be carried out by casualty officers. Radiotherapy is a highly specialized branch of medicine, and requires skill, judgment, and experience in those who practise it. Proficiency in it comes only after a lengthy training, and in our opinion to allow "hospital and armaments works casualty officers" to treat these cases by *x* rays after having been "taught the essentials in a few weeks" would be to incur grave risk of *x*-ray injuries. The statistics of the medical defence societies show how real this risk is. A shortage of radiotherapists would not justify the exposure of patients to the danger of unskilled treatment. The danger is so real that it would be better not to use the method at all if no radiotherapist was available. This position has in fact not yet been reached.—We are, etc.,

S. COCHRANE SHANKS,
President.
WALTER M. LEVITT,
Vice-President, and Chairman of the Radiotherapy Section Committee.
M. H. JUPE,
Honorary Secretary.

The Faculty of Radiologists, London, W.1, Nov. 28.

SIR,—The Executive Committee of the British Association of Dermatology views with much concern the statements made in the annotation "*X* Rays in Treatment of Inflammations" (November 15, p. 700). While not desirous of discussing the question of the value of *x*-ray treatment in acute inflammations of the skin, the committee considers that the statement made in this article that there is no risk of radiation injuries in giving doses of 100 to 200 *r* for three to five consecutive days is not in accordance with common experience. With the apparatus generally employed for superficial therapy the doses recommended would be capable of producing severe and permanent injury to the skin.

Further, the committee considers that the recommendation made that casualty officers should be encouraged to treat their patients with *x* rays is dangerous to a degree. Past experience has clearly shown that this form of therapy should only be applied by those who have had long training in the use of so powerful and potentially dangerous an agent. Serious after-effects may not show themselves for many years after treatment, and without an intimate knowledge of these after-effects irreparable damage may be done to patients.—I am, on behalf of the Committee, Yours faithfully,

H. W. BARBER,
London, W.1, Dec. 1. Hon. Secretary, British Association of Dermatology.

SIR,—In the *Journal* of November 15 (p. 700) you draw attention to the recent review of Pendergrass and Hodes of the use of *x*-ray treatment in inflammations. Radiologists themselves are not yet agreed on the best technique for the treatment of inflammations, and your statement that "any registrar or house-surgeon who is in the habit of referring such cases to the *x*-ray therapy department can testify not only to the shortening of the period of incapacity but also to the restoration of useful function in fingers that would otherwise have been amputated" is a surprising one, and raises a doubt as to the value of the testimony that would be given.

Under these circumstances it is most undesirable to suggest that *x* rays should be used widely in the treatment of inflammations until much more research has been done in those clinics where it is possible to use accurately measured doses under conditions that can be strictly defined and repeated, and where results can be impartially recorded and controlled by comparison with patients treated by other means.

It is especially dangerous to suggest that "casualty officers could be taught the essentials in a few weeks." Some surgeons have recently learned to their cost that *x* rays not controlled by competent radiologists can be dangerous, and it should be accepted that *x*-ray therapy should only be practised under the direction and continuous supervision of a fully experienced radiologist. I am the last to suggest that radiotherapy should only be practised by those who can do nothing else, but I do maintain that it should not be regarded as equivalent to minor surgery, but as needing as much training, care, and thoroughness as major surgery.—I am, etc.,

London, S.E.11, Dec. 1. GEORGE F. STEBBING.

Haemoglobinometry

SIR,—Permit me to add some more practical hints to the important and interesting discussion by Dr. R. D. Campbell (November 22, p. 747) on the difficulties of everyday haemoglobinometry.

I have found by personal experience that blood kept under an atmosphere of CO will preserve its colour and CO capacity for as long as twenty-five years. I have had a Haldane tube since 1912, and it has in no way lost its accuracy and usefulness. With the Sahli apparatus, on the other hand, I have not had the same good experience. The suspension in his tube forms a sediment in time, and this cannot be redispersed even by shaking with the enclosed bead. This settling out and the discoloration give rise to inaccurate and incommensurable results. Leitz attempted to remedy these defects by using a coloured glass rod in place of the tube, but this model proved a failure.

In any case, why should one use an apparatus which gives only an arbitrary measure instead of an instrument giving absolute functional values? The chief aim of haemoglobinometry is the determination of the oxygen-carrying capacity of the blood. We know that 1 gramme of haemoglobin can absorb 1.34 c.cm. of O_2. Sahli arbitrarily assumed that the average normal blood contains 17% of haemoglobin. He arrived at this figure by mixing together a certain quantity of blood from each of his assistants, and declaring this as the standard haemoglobin concentration in the blood of the healthy normal man and defined it as the 100% standard. This standard blood would represent an oxygen capacity of 23 vol. % O_2. Contrary to Sahli, Haldane took for his 100% standard a blood having an O_2 capacity of 18.5 vol. %. Considering, however, that Sahli's standard was the blood of persons living at Berne, 1,600 ft. above sea-level, it is obvious that his average haemoglobin concentration was considerably higher than is the average at zero altitude. Quite naturally the different values of the "100%" standard have caused some confusion, and it is not surprising that, when using Sahli's haemometer, we often find "anaemias" where in fact none exist.

Another source of error in the acid haematin method is the time of the dilution. The instruction to dilute after one minute is very vague, because after half a minute only 80% of the terminal colour reaction is reached; after one minute the change is 83%; after two minutes 88%; after five minutes 93% of the darkening of the haematin is reached. After this time the change goes on very slowly, and it takes hours for it to become complete. For this reason it is advisable to dilute the acid haematin after five minutes, when the curve of change has become less steep.

The Haldane apparatus complies with all requirements of a satisfactory haemoglobinometer, and, moreover, matches better the normal erythrocyte figures and thus gives a more accurate colour index. The difficulty of obtaining coal gas for the Haldane apparatus can be overcome by keeping a large bottle of water which is shaken with coal gas and thus becomes saturated with CO. If the water is covered with liquid paraffin this keeps the dissolved gas practically indefinitely. This water contains quite sufficient CO to convert the small samples of oxyhaemoglobin with which we deal in tests. For our daily requirements of CO water we may fill an old insulin bottle with a rubber cap from the large stock.—I am, etc.,

London, W.1, Dec. 1. J. PLESCH.

E.N.T. Instruments

SIR,—When the E.M.S. was organized for prospective casualties from enemy action an ear, nose, and throat service was not considered an essential part of that service. As the character and functions of the E.M.S. hospitals changed and expanded to embrace all services, ear, nose, and throat work

was naturally included. It will be appreciated that in the early months of the war the "Services" had first choice of any equipment in the country, and when large numbers of special instruments for many hospitals were required a marked scarcity was revealed. The task of arranging for manufacture of those instruments was heavy and has taken many months, and, indeed, some of the orders have not yet been completed.

Ear, nose, and throat surgeons are of an ingenious turn of mind, and it is rare to find two who use the same instruments: so that disappointments are bound to be found in a standard set.—I am, etc.,

London, W.1, Dec. 3. W. M. MOLLISON.

Endoscopic Resection of the Prostate

SIR,—Mr. W. E. M. Wardill (November 22, p. 749) has been kind enough to take notice of my description of the adjustable check method of performing endoscopic resection (October 25, p. 583). He offers three reasons for his disbelief in the efficiency of this method. I give his criticisms below, together with my replies.

1. "The necessity to make frequent references to the verumontanum as a guide to the external sphincter during the course of the operation." As I pointed out, I believe this procedure—the orientation of the entire operation around a small structure easily totally or partially obscured by slight haemorrhage—is responsible for the small but almost universal incidence of incontinence following resection. If the internal meatus - verumontanum distance is accurately measured as the initial step in the operation and therefore at a time when there is no haemorrhage, and if this distance is fixed on the resectoscope rack, it is only necessary during the operation to refer to the internal meatus, not the verumontanum. This method appears superior, as the internal meatus is a landmark far more easily identified and less easily obscured than the verumontanum: indeed, one can scarcely miss it. Further, as the cutting process starts at the internal meatus it has to be identified in either case. Mr. Wardill states that it is manifestly impossible to retain the resectoscope in a fixed position if an efficient operation is to be carried out. He has, I fear, misunderstood my remarks on this point. I said, "For obvious reasons the resectoscope sheath must be held stationary during the resection"—not during the operation. It is during the actual cutting of the prostatic strip that it is dangerous to move the resectoscope outwards the smallest degree. I have neither advocated nor attempted to practise retaining the resectoscope in a fixed position during the operation—a completely impossible achievement by any standards.

2. "Measurement by any gadget must be entirely misleading where a middle lobe exists and where the prostatic urethra varies in length from side to side." Before publishing this method I gave it a reasonable trial by removing 537 grammes from twenty-seven patients in forty-eight resections, including adenomatous, fibrous, and carcinomatous prostates. The majority of these patients had middle-lobe enlargements or variable prostatic urethras, and therefore belong to that type in which Mr. Wardill claims the use of a gadget must be entirely misleading. It is this very type that has formed the basis for its successful trial. The details of the procedure are difficult to describe but easy to perform. Suppose the right lateral lobe measures 2 cm. from the internal meatus to the verumontanum and the left lateral lobe (or middle lobe) has an intravesical projection of 1 cm. and therefore measures 3 cm. With the check set for a cutting distance of 2 cm.—that is, the shorter cutting distance—both lobes are resected. Prostatic tissue 1 cm. in length now remains from the left lateral lobe adjacent to the verumontanum. The resectoscope is held so that the loop lies at the level of the internal meatus of the *right* lateral lobe but facing the *left* lateral position (verified by rotating the instrument). The pinion is now rotated, withdrawing the loop until the remaining projecting 1 cm. of tissue comes into view (the loop will have travelled 1 cm.). The loop is engaged in this tissue, which is resected. It is impossible to resect more than this 1 cm. and therefore damage the external sphincter because the check is still set for its original cutting distance of 2 cm.

3. "It appears to me to be bad practice to cut if haemorrhage obscures the view." After the resection of some 15 grammes associated with the most careful coagulation of all large and medium-sized spurting vessels, haemorrhage, although slight, is still sufficient to render difficult the identification of such a small structure as the verumontanum, while the identification of such an obvious landmark as the internal meatus remains easy. Further coagulation of every single oozing point in order to produce a completely clear medium is undesirable, as it leads to increased sepsis.

Occasionally a portion of the prostatic rim at the internal meatus is sharper and more prominent than the remainder (which I referred to as the prostatic ledge) and is therefore more easily identified. If this is removed last an obvious landmark is retained during the operation. I take it Mr. Wardill is referring to this point when he accuses me of the recommendation "to leave the most prominent part of the prostatic ledge at the internal meatus"—a recommendation that I never made. This, I think, is clear to anyone who reads the whole of my original sentence, of which the above few words are Mr. Wardill's incomplete and very misleading quotation.—I am, etc.,

Manchester, Nov. 27. H. T. COX.

Industry and Lactation

SIR,—In the *Journal* of November 29 (p. 783) there is a summary of the B.M.A. Report on Medical Supervision of Industrial Workers, in which the statement is made that "withdrawal from employment four weeks before confinement is usually sufficient"—on that I make no present comment—"but in many cases it will be desirable for her" (presumably the mother) "to remain away from work for more than four weeks afterwards." Sir, what a commentary on our civilization—which we are fighting to save! "More than four weeks." Have we jettisoned the most elementary of the rights of Man, that his mother should feed him during his first 300 days? Few are the factories where the conditions are compatible with lactation.—I am, etc.,

Holmes Chapel, Nov. 30. LIONEL JAS. PICTON.

Publicity for Preventive Medicine

SIR,—A friend of mine is doomed to die a slow, painful death of torture to both herself and her friends and relations; she is dying from carcinoma of the cervix, which in spite of operation and *x*-ray therapy progresses. This patient suffered for many years from post-menopausal vaginal bleeding, of which, being a busy wife and mother, she took no notice. Had this woman realized the implication of her condition and sought medical advice earlier this tragedy might have been averted. But she did not know, and thousands of her sisters to-day do not know, just as thousands are still treating acute appendicitis with purgatives.

It is high time the medical profession abandoned its conservative attitude to this matter and made use of the facilities offered by the Press, the cinema, and the radio to educate the general public in some of the principles of preventive medicine, and not to allow the field to be monopolized any longer by the patent medicine vendors. One good talk on the radio per week would probably save thousands of lives and prevent a proportionate amount of suffering in a year. Let us use modern weapons in the fight against disease.—I am, etc.,

W. B. JAMISON, M.B., B.Ch.,
Nov. 25. Surgeon Lieutenant, R.N.V.R.

Food Advice for Working-class Mothers

SIR,—I hoped that an abler critic than myself would have written to comment on Mr. W. C. W. Nixon's letter (November 1, p. 633).

Any practitioner in any industrial district knows the profligate waste of good food of which the majority of working-class mothers are guilty. This gross waste is largely the result of ignorance on the part of the women, who have little or no idea of how to choose wisely or cook properly foods of the highest nutritive value. I suggest that every hospital and every maternity and child welfare clinic should have a food advice bureau with a demonstrator of cooking, similar to the one at the Soho Hospital for Women. In this way many thousands of women would learn how to avoid throwing vitamins down the sink, and make their own contribution to one of the greatest measures in preventive medicine—proper nutrition.—I am, etc.,

Bristol, Nov. 28. N. A. MARTIN.

Control of Diphtheria in Schools

SIR,—It would be a pity if the excellent work reported by Prof. G. S. Wilson and his team of laboratory workers (*Journal*, November 29, p. 759) should give the impression among practitioners that there is a single panacea for the control of diphtheria among school children. The procedure likely to be both effective and practicable depends on such variables as the nature of the school (day or residential), its site (town or country), the stage of the outbreak (early or late), the age distribution of the children at risk, and the hospital and laboratory facilities available. To give two contrasting examples: in a residential school for older town-bred children where the outbreak has been smouldering for some weeks the incidence of carriers is likely to be high and the proportion of susceptible children low. In such a case the procedure of choice is Schick-testing followed by combined passive-active immunization of the positive reactors, without recourse to routine swabbing or isolation of carriers. On the other hand, at the onset of an epidemic in a country day-school detection and early segregation of the carriers would be most useful; but how many laboratories in the country could cope suddenly with the bacteriological examination on tellurite blood-agar plates of nose and throat swabs from 200 to 300 children? Between these extreme examples there are many gradations of circumstances, and in most instances we feel that Schick-testing *is* "necessary and desirable." If the small "passive" dose of antitoxin is given four to six hours after Schick-testing it will not affect the skin-response, and the restriction of active immunization to straight positive reactors lessens the risk of untoward inoculation reactions which occur most frequently among pseudo-reactors, whether Schick-positive or -negative.

The routine policy of detection and segregation of carriers raises laboratory and hospital problems, and even if hospital accommodation were available there is in England and Wales no legal power to remove carriers as such to an isolation hospital. Besides, some of them are only transient carriers whom it would be unfair to admit to a diphtheria ward. It seems to us that if the positive reactors, especially those of school and pre-school age, are given passive-active immunization and kept under medical supervision for a month, there is little point in seeking to detect and isolate carriers, whose presence in the community may help to maintain an adequate general level of immunity.

Incidentally, the noteworthy finding reported by these workers that the diphtheria bacillus was confined to the nose in more than half the carriers emphasizes what is often forgotten outside hospital practice—the prevalence of the nasal carrier and the need, where circumstances demand swabbing, for examining both nose and throat.—We are, etc.,

WILLIAM GUNN.
ROBERT CRUICKSHANK.

London, N.W.3, Dec. 6.

Obituary

T. HENRY WILSON, F.R.C.P.I.

Late King's Professor of Midwifery, Trinity College, Dublin

We regret to announce the death on November 20 in Dublin of Prof. T. Henry Wilson, formerly one of the leading obstetricians and gynaecologists of that city, who practised for many years in Merrion Square, and had been President of the Royal College of Physicians of Ireland.

Thomas Henry Wilson was born in Dublin on January 1, 1865, the elder son of Captain John Wilson of the XIV Regiment. His schooldays were passed at Trinity College, Stratford-on-Avon, and at Foyle College, Londonderry; he then entered Trinity College, Dublin, as a student of arts and graduated M.A., but did not take the medical degrees of the university. He obtained the licences of the Irish Royal Colleges in 1886 and the L.M. of the Rotunda Hospital, became M.R.C.P.I. in 1897, and F.R.C.P.I. a year later. He spent some time after qualification in postgraduate study at Leipzig.

After serving as senior master of the Rotunda Hospital Henry Wilson was appointed gynaecologist to the Richmond Hospital and to Sir Patrick Dun's Hospital, Dublin, and some years later was elected to the King's Professorship in Midwifery at Trinity College. He was for a long time examiner in gynaecology and midwifery for the Royal College of Physicians of Ireland and also external examiner in midwifery for the University of Durham and for Queen's University, Belfast. The Royal Irish Academy elected him into its membership, and for many years he took an active part in the proceedings of the Obstetrical Section of the Royal Academy of Medicine in Ireland, of which he had been honorary secretary. He held office as President of the Royal College of Physicians of Ireland in 1926-7, and had been vice-president of the Section of Gynaecology and Obstetrics at the Annual Meeting of the British Medical Association in London in 1910. He contributed several papers on gynaecological subjects to the *Transactions of the Royal Academy of Medicine in Ireland*, and on complications of labour to the *British Medical Journal*.

Prof. Wilson married in 1922 Gladys Mary, elder daughter of the late Colonel W. Lyster-Smythe of Barbavilla, Co. Westmeath. He retired from his chair in Dublin University on account of failing health.

Dr. JAMES DAVIDSON MACKAY has died at Aberdeen as the result of an injury received last May while carrying out his duties as A.R.P. medical officer in the North of England. He graduated M.B., Ch.B. of the University of Aberdeen in 1908, and after serving as house-surgeon at the Aberdeen Royal Infirmary entered the part-time public health medical service, working first as assistant in the Aberdeen Health Department, then as deputy M.O.H. to the Kincardine County Council. Later he was appointed M.O.H. for the Borough and Rural District of Bridport, the Borough of Lyme Regis, and the Rural District of Beaminster. He joined the British Medical Association in 1910 and took the D.P.H. in 1932.

Dr. ALGERNON EDWARD LUKE WEAR, for over thirty years chief medical officer to the Leeds Education Committee, died on November 30 at his home in Harrogate. He was born at Newcastle-upon-Tyne in June, 1866, and was educated at the Newcastle Royal Grammar School, at Durham University, and at University College, London, graduating M.B., B.S.Dunelm in 1891, M.D. three years later, and taking the D.P.H. in 1912. He held resident posts in Leeds and was appointed school medical officer for the city in 1910. Dr. Wear was an old volunteer, and on the formation of the Territorial Force in 1908 became lieut.-colonel, 1st West Riding R.A.M.C. He went to France on the outbreak of the last war as commanding officer of No. 7 Casualty Clearing Station, was mentioned in dispatches, awarded the C.M.G. in 1915, and promoted to the rank of Colonel A.M.S. He had been a member of the British Medical Association for thirty years, and was a past president of the Yorkshire Branch of the Society of Medical Officers of Health.

We regret to announce the death on December 1 of Mr. FREDERICK NESFIELD COOKSON, F.R.C.S., at the Staffordshire General Infirmary, which he had served long and faithfully as surgeon and afterwards as consulting surgeon. He was born in 1871 and studied medicine at the Middlesex Hospital, where he won the Freer Lucas Scholarship and acted as house-surgeon after graduating M.B. of the University of London in 1894. He held the posts of clinical assistant at the Chelsea Hospital for Women and house-surgeon at the Bristol General Hospital, and proceeded to the M.D. degree in 1898, taking the Fellowship of the Royal College of Surgeons in 1899. Mr. Cookson was a member of the British Medical Association throughout his career at Stafford, and his local colleagues nominated him to serve as representative of the Division on three occasions—in 1906 in London before the Annual Meeting held that year at Toronto, in 1908 at Sheffield, and in 1909 at Belfast. He retired from active work a year or two ago.

One of the many directions in which South African money gifts to this country are being used is to provide a weekly meeting for women and children undergoing hospital treatment for air-raid burns which have caused bad disfigurement.

The Services

HONORARY SURGEON TO THE KING

Major-General R. E. Barnsley, M.C., late R.A.M.C., has been appointed Honorary Surgeon to the King, in succession to Major-General W. B. Purdon, D.S.O., O.B.E., M.C., late R.A.M.C., who has retired.

NAVAL AWARD AND MENTION IN DISPATCHES

The D.S.C. has been awarded to Temporary Surgeon Lieut. Benjamin Crawshaw, R.N.V.R., for bravery and devotion to duty when H.M.S. *Grimsby* was lost.

Surgeon Lieut. Charles John Robarts, R.N., has been mentioned in dispatches for bravery and devotion to duty when H.M.S. *Auckland* was lost.

EFFICIENCY DECORATION, TERRITORIAL ARMY

The Efficiency Decoration of the Territorial Army has been conferred on Lieut.-Colonel Ranfurly Percival Stanley Kelman and Major Alfred Badenoch, R.A.M.C.(T.A.).

CASUALTIES IN THE MEDICAL SERVICES

ROYAL ARMY MEDICAL CORPS

Wounded

War Substantive Captain William Robert Gemmell.

Universities and Colleges

UNIVERSITY OF WALES

WELSH NATIONAL SCHOOL OF MEDICINE

The following candidates have satisfied the examiners at the examinations indicated:

M.B., B.CH.—*Obstetrics and Gynaecology:* H. J. Houghton, Dorothy M. Hyde, Tessie Phillips, Annie M. Rees, Dilys M. Rees, Dorothy Roberts, D. G. H. Tutton, A. K. Toufeeq, S. E. Williams. *Surgery:* Beryl Bevan, W. M. Jones, Monica Parry-Morton. *Pathology and Bacteriology:* E. R. Edmunds, Phoebe J. M. Griffiths, T. Jones, H. D. Walters, A. A. Yauniskis.

SOCIETY OF APOTHECARIES OF LONDON

The following candidates have passed in the subjects indicated:

SURGERY.—J. H. Ebbetts, M. C. Hannon, C. H. Kitchen.

MEDICINE, PATHOLOGY, AND FORENSIC MEDICINE.—C. Farès, R. Gunewardena, J. T. Hemingway, C. H. Kitchen, F. G. Leekam, S. A. MacDonald.

MIDWIFERY.—S. E. Gordon, R. J. C. Hutchinson, H. G. King, S. A. MacDonald, R. Mather, N. Rao, C. J. O. Taylor.

The diploma of the Society has been granted to M. C. Hannon and F. G. Leekam.

FACULTY OF RADIOLOGISTS

The following candidates have satisfied the Fellowship Board at the examination for the Fellowship of the Faculty: *Radiodiagnosis.*—Eric Samuel, M.D., F.R.C.S., D.M.R.E. *Radiotherapy.*—Alice Margaret Ross, M.B., Ch.B., F.R.C.S.Ed., D.M.R.E.

Medical Notes in Parliament

Conscription of Women

In the House of Commons on December 2 Mr. CHURCHILL moved a resolution stating that, in the opinion of the House, for the purpose of securing the maximum national effort in the conduct of the war and in production, the obligation for National Service should be extended to include the resources of woman-power and man-power still available, and that the necessary legislation should be brought in forthwith.

Explaining the new proposals, the Prime Minister said that there would be three important changes in the case of males. Hitherto reservation from military service had been by occupational blocks. It was now proposed to change over gradually from this system to that of individual deferment. The sole test would be the importance to the war effort of the work on which the man was engaged. It was proposed to raise the age of reservation by one-year steps at monthly intervals, beginning on January 1, 1942. The age for compulsory military service would be raised from 41 to 51. Men called up over 41 would not be posted for the more active duties with the Forces. It was not intended to call on anybody to do tasks for which he was physically unfitted. It was proposed to lower the age of military service to 18½, and to register boys and girls between the ages of 16 and 18.

It was not proposed at present to extend compulsion to join the Services to any married woman, though they could, of course, volunteer. The existing power to direct married women into industry would continue to be used with discretion. It was proposed to take powers to require women to serve in the uniformed auxiliary Forces of the Crown or Civil Defence. All those affected would have exactly the same rights and safeguards as men subject to compulsory service. The new power would be applied in the first instance, and probably for some time to come, only to unmarried women between 20 and 30. This special movement of young women must be directed to the A.T.S. It was not proposed, when once they had joined the A.T.S., to compel them to serve in the lethal or combatant branches. Women would have the right to volunteer, but no woman in the A.T.S. would be compelled to go to the batteries.

In the great field of married women and women doing necessary household work, comprising about 11,000,000 persons, the Government saw their largest reserves for industry and home defence in the future. The part-time employment of women in industry had already been developed, but on nothing like the scale which must be reached in the months before us. To this matter employers would be wise to give their immediate attention, to see how they could adapt their businesses. There was an immense variety of arrangements to enable women to divide up domestic tasks and be free to work close at hand in the factory or the field. In some cases women would arrange to "Box and Cox," in others a group of five or more might arrange for each to cook a day in turn, or, again, the development of crèches and public nurseries or combined nurseries might free or partially free mothers of families from domestic duties. Wherever practicable work would be brought as near to the homes as possible.

Mrs. TATE said that there was a deplorable degree of absenteeism in the factories, and it was greater among women than men. One of the main reasons for the absenteeism of women was the inadequate number of nursery schools and day nurseries in which women could leave their children while they worked in the factories.

On December 4, after three days' debate, the House of Commons carried by 326 to 10 a motion declaring that the obligation for National Service should be extended to include the resources of woman-power and man-power still available. Replying to the debate Mr. BEVIN said it had been arranged that women doctors would serve on medical boards to take care of the women called up. The proposed registration of boys and girls at 16 was the first beginning in dealing with the adolescent in an organized manner. After the division Mr. Bevin introduced the National Service Bill, and it was read a first time.

Alleged Incorrect Medical Certification

In a reply on December 4 to Captain C. S. Taylor, Mr. BEVIN said that last year the police investigated a number of cases in which members of the medical profession were alleged to have provided incorrect medical certificates for men of military age, stating that they were unfit for military service. The evidence was not sufficient for a prosecution. Further cases were under investigation. He could not say whether particulars of these cases had been reported to the General Medical Council. He assured Sir Henry Morris-Jones that, in the interests of the medical profession, he would adopt ruthless measures in the case of anyone found guilty. Mr. Bevin added: "I have to get evidence before I can bring a prosecution. Doctors are very fortunate; they can bury their mistakes."

Captain TAYLOR gave notice that he intended to raise this matter on a subsequent day on the motion for the adjournment of the House.

No. 47

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended November 22.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1941 (a)	(b)	(c)	(d)	(e)	1940 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	14	5	32		2	139	10	45	1	3
Deaths		1	1				1	2		
Diphtheria	1,082	38	324	56	43	1,366	50	498	28	27
Deaths	27	—	7	2	1	42	3	12	1	—
Dysentery	209	7	66	—	—	91	1	30	7	—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	2	1	1	—	—	4	—	1	—	—
Deaths		—	—				1	—		
Enteric (typhoid and paratyphoid) fever						26	—	10	2	—
Deaths						2	—	1	—	—
Erysipelas		—	55	8	3		34	64	10	14
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years										
Deaths	35	2	7	17	4	35	3	13	7	1
Measles	639	47	32	49	4	13,561	302	536*	—	16
Deaths	—	2	—	1	—	25	3	2	1	—
Ophthalmia neonatorum	59	2	23		—	67	2	19		—
Deaths										
Paratyphoid fever	18	—	6	—						
Deaths		—		—						
Pneumonia, influenzal†	1,100	45	15	1	2	713	46	*10	7	6
Deaths (from influenza)	25	5	5	2	1	25	2	1	—	1
Pneumonia, primary			205	14				189	14	
Deaths		34		11	4		39		12	5
Polio-encephalitis, acute	—	—				2	—			
Deaths		—					—			
Poliomyelitis, acute	13	1	2	4	—	33	1	4	—	—
Deaths		—	—				—	—		
Puerperal fever		—	13	—	—	—	—	5	—	—
Deaths	—	—					—			
Puerperal pyrexia	142	11	13	1		131	3	20		2
Deaths										
Relapsing fever	—	—				—	—			—
Deaths										
Scarlet fever	1,417	46	256	59	40	1,750	89	237	40	54
Deaths	3	—	—	1	—	5	—	1	—	2
Small-pox	—	—	—		—	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhoid fever	10	1	3	6	3‡					
Deaths	1	—								
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	1,995	210	83	39	8	2,324	19	220	—	16
Deaths	9	2	4	1	—	13	—	—	—	—
Deaths (0–1 year)	358	22	74	44	19	325	21	69	42	13
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	4,461	624	630	198	121	5,810	1,075	684	213	140
Annual death rate (per 1,000 persons living)			13·7	13·1	§			13·8	14·2	12·3
Live births	4,773	392	809	249	221	4,709	353	720	307	239
Annual rate per 1,000 persons living			16·5	16·5	§			14·6	20·5	20·9
Stillbirths	192	13	34			176	9	28		
Rate per 1,000 total births (including stillborn)			40					37		

* Notification in certain administrative areas only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes paratyphoid A and B for Northern Ireland.

§ Owing to evacuation and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

The chief features of the returns for England and Wales for the week were the increased incidence of pneumonia, 103 cases, and scarlet fever, 65 cases, and the decline (71) in the notifications of whooping-cough. The rise in the pneumonia figures was contributed by the West Midlands, North Midlands, and North-Western Counties. The weekly number of cases from this disease has been doubled since the week ending November 1. The rise in the incidence of scarlet fever was confined to Wales and the South-Western and North-Western Counties: the notifications reached the largest weekly total recorded this year. Although the notifications of whooping-cough declined for the country as a whole, two counties showed substantial rises: Lancashire had an excess of 40 cases compared with the preceding week, due to the experience of the county boroughs ; London had an increase of 33 cases, the largest returns for the metropolitan boroughs being those of Islington 23, Lambeth 20, and Wandsworth 25.

In Scotland the number of cases of diphtheria reported, which was 324 and an increase of 62 on the preceding week, reached a new high level. The increase was due mainly to the western area, where 253 cases were notified against 193 in the previous week.

Dysentery

Although the notifications of dysentery in England and Wales exceeded those of the preceding week by only 5, the total was the largest recorded for three and a half years, over one-third being contributed by two counties—Surrey 42 and Lancashire 34. The largest of the new outbreaks were in Bedfordshire. Biggleswade R.D. 25 ; Hertfordshire, Berkhamsted U.D. 14 and St. Albans R.D. 4 ; Shropshire, Ellesmere R.D. 20.

In Scotland there was an increase of 21 cases. Glasgow, where notifications rose from 4 to 21, was the only area in which they differed appreciably from the preceding week.

Paratyphoid and Typhoid Fevers

For the twelfth consecutive week a drop in the number of notifications has been recorded in England and Wales, and the incidence now tends to the usual endemic level. A relatively large number of notifications, arising from local outbreaks of paratyphoid, has been the feature of the returns during the summer and early autumn. During the six months beginning May 18 the number of cases notified was 4,066, as compared with 1,039 and 727 for the corresponding periods of 1939 and 1938 (when paratyphoid and typhoid were still notified together under "enteric fever"). The various outbreaks were due to infected food, and the largest of these local epidemics of paratyphoid were those in the districts of Liverpool and Bristol. The former, which originated in a multiple bakery, spread through the surrounding districts, and 883 cases were notified between June 7 and September 13, 530 of them in Liverpool. In Bristol 195 cases were notified during the four weeks from August 17 to September 13. The outbreaks have been generally of a mild type, and in the 126 large towns, for which the number of deaths is available, the ratio of deaths to cases during the present year was 1 to 34, compared with the rate of 1 to 22 in 1940.

Quarterly Returns for Eire

The returns of the Registrar-General for the third quarter of 1941 have been issued. The birth rate was 20.1 per 1,000, 0.7 above the rate for the third quarter of 1940. Infant mortality was 64 per 1,000 births, as compared with 50 for the corresponding period of 1940. A death rate from puerperal causes of 2.7 per 1,000 births was recorded, 0.2 below the rate for the September quarter of last year. The general death rate was 11.6 per 1,000, being 0.1 in excess of the third quarter of the preceding year. Of the 317 deaths from diarrhoea and enteritis under the age of 2 years, 223 were recorded in the city of Dublin.

Returns for the Week Ending November 29

The number of notifications during the week in England and Wales included scarlet fever 1,415, whooping-cough 1,959, diphtheria 1,047, measles 850, pneumonia 1,101, cerebrospinal fever 140, poliomyelitis 15, dysentery 197, paratyphoid 16, and typhoid 7. Thirty-seven deaths were due to influenza.

Medical News

Colonel H. Letheby Tidy will deliver a lecture on "Non-tuberculous Infections of the Chest" at the Weston Hotel, Bath, on Thursday, December 18, at 5.30 p.m. All Service medical officers and civilian practitioners will be welcome.

The next annual general meeting of the British Orthopaedic Association will take place in Oxford on January 2 and 3, 1942. The scientific sessions will be held in the lecture theatre of the Department of Human Anatomy at 9.30 a.m. on both days. The programme includes an address by the president, Prof. T. P. McMurray, on "Conservatism in Orthopaedic Surgery," and a paper by Prof. Philip Wilson (New York) on "Arthroplasty."

The first training course for industrial accident prevention organizers ever held in this country, arranged by the Royal Society for the Prevention of Accidents on behalf of the Factory Department of the Ministry of Labour and National Service, was such an outstanding success that a second course will be held at Balliol College, Oxford, from January 2 to 13. Programme and syllabus may be had from "Rospa," 52, Grosvenor Gardens, London, S.W.1, or 426, Strand, Cheltenham, Glos.

Scotland is brought into line with England and Wales by an Order which the Secretary of State has issued limiting the proportion of liquid paraffin in emulsions. On and after December 15 it will be illegal for an emulsion to be manufactured containing more than 25% volume in volume of liquid paraffin. The new Order—Paraffin Emulsion (Reduction of Liquid Paraffin) (Scotland) Order, 1941, issued under Regulation 55 of the Defence (General) Regulations, 1939—deals with manufacture, but still leaves a doctor free to prescribe for the requirements of individual cases.

The first specimen of radium in Spain has been found in Cordoba and has been given to the Spanish Cancer Institute.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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QUERIES AND ANSWERS

X-ray Therapy in Peptic Ulcer

Dr. CHARLES HORWITZ (London, N.1) writes: I have been wondering if it would not be possible for our *x*-ray specialists to work out some formula for the treatment of peptic ulcer by means of carefully graduated doses of *x* rays. The healing and curative properties of carefully controlled and graduated doses of *x* rays in selected cases in other conditions are now well established, but I do not recall having read or heard of any experiments in this connexion. The present medical treatment of peptic ulcer is long and tedious and unsatisfactory in many cases, and entails an exacting regimen for the patient. It might well prove that a combined treatment of rest, diet, alkalis, and a course of graduated doses of *x* rays might materially shorten the time required to bring about the healing of these ulcers of the stomach.

Stabbing Heel Pains

Dr. J. BUCHANAN (Killyclogher, Omagh) writes: In answer to W. R. S. (November 15, p. 716) it seems possible that the pain may be caused by senile arteriosclerosis in the leg and foot. The details given are too few for a definite diagnosis. My reasons for forming this opinion are: (1) It comes on at "night." (2) It seems to be a "rest" pain, coming on when the patient is still and quiet. (3) It comes when the patient is in the horizontal position, and not when the leg is dependent. (4) It seems to come on in the heel (or sole) without any obvious "cause." The presence or absence of obstructed arteries, paraesthesia, or claudication, etc., should be considered. Prof. Learmonth of Edinburgh (in the *Practitioner*, March, 1939, p. 247) says Dr. Buerger's exercises are of definite value: (*a*) leg up, 60 degrees, (*b*) leg down, (*c*) leg horizontal; change every two or three minutes; one hour thrice daily.

Income Tax

Repairing Lease

"EPSILON" inquires whether, if he hires a house on a full repairing lease for ten years, he can have a deduction for so much of his expenditure on repairs as is not set against his professional earnings.

*** The relief for maintenance of property is given to the owner, and "Epsilon" can therefore claim the residue only to the extent to which he has to pay tax as the owner of some beneficial interest in the property. If, for instance, the rent is, say, £100, and the net assessment under Schedule A is, say, £120, he can claim against the £20 (£120–£100) which represents amount of his interest in the yearly income from the property.

Two Cars Maintained—Obsolescence

J. F. has kept two cars for his work for about twenty years and has always been allowed obsolescence on both. This year the local inspector of taxes takes the view that owing to the decrease of income he can only allow it on one car. J. F. proposes to appeal.

*** We cannot see the justification for the inspector's attitude. Rule 6 relating to Cases I and II, Schedule D—which is the relevant provision—refers to "machinery or plant used for the purposes of the trade" [or profession], and the inspector has no right to object on the ground that more plant and machinery is in fact used than he or some other persons may think is economical or necessary.

Removal to Another Practice

T. M. sold his practice in the North of England and bought a practice in the South. Can he deduct the cost of removal?

*** In our opinion—No. In a case decided in 1905 (Granite Supply Association *v.* Kitton) it was held that the expense of removing a business from one place to another was inadmissible; it seems to follow, *a fortiori*, that an expense incurred in relinquishing one business (or practice) and removing to another would also be inadmissible.

Construction of Air-raid Shelter

J. D. has had an air-raid shelter constructed at his residence so that he "can be available to patients in cases of emergency." The inspector of taxes has refused to allow a deduction for a proportion of the cost.

*** We understand that some allowance is given where the protection takes the form of strengthening but not altering the structure—for example, by strutting with steel or timber, bricking-up windows, etc.—but is refused where the protection takes the form of some additional structure. The ground of distinction is that, whatever be the position as regards expenditure of the former kind, the latter is clearly capital outlay. There seems to be adequate legal ground for that view.

LETTERS, NOTES, ETC.

Scabies

Dr. W. J. YOUNG (Harston, Cambridge) writes: Much is written in the *Journal* about the use of sulphur in this trouble. I should like to point out that whereas one and all advocate the use of sublimed (flowers of) sulphur, the precipitated sulphur is much more active. I notice, too, in the recent correspondence no mention has been made of Vlemingkx's solution, a solution of sulphides of calcium, which was almost universally used fifty years ago.

Confusion of Names

Dr. A. TANDY CANNON writes: Certain newspapers published reports relating to the recent appearance of Dr. Alexander Cannon before the General Medical Council, and due to the fact that his registered address is shown as 38, Harley Street, proceeded to describe him as "a Harley Street psychiatrist." Apparently, however, this is not his present address, and it would seem that I am the only psychiatrist of that name now practising in this area. In view of the above circumstances certain persons have been led to believe that I am the Dr. Cannon referred to, and I would therefore be grateful if you would publish this letter, as of course I have no connexion with the Dr. Cannon in question and I am in no wise related to him.